

American Artisan and Hardware Record

Vol. 92, No. 25

CHICAGO, DECEMBER 18, 1926.

\$2.00 Per Year



Residence in Asheville, N. C., referred to in letter below. Note close-up view of leader head at right.



New Jersey
zinc

HORSE HEAD ZINC " - - - the job will last indefinitely and will continue to please the owner." You can say the same of every job you do with Horse Head Zinc.

The owner will be pleased at the start because you can do artistic work with Horse Head Zinc. And because its cost is low compared with other permanent installations.

The owner will continue to be pleased as years pass and your work stands without need of repair, and without staining and disfiguring his home.

You will be pleased at your ability to get more business through the lower cost of Zinc. You can use Horse Head Zinc to your own and your customers' advantage.

All standard shapes and sizes of Horse Head Zinc conductors, gutters and fittings are made and distributed by the following fabricators:

DAVID LUPTON'S SONS CO. Philadelphia, Pa.
THE J. M. & L. A. OSBORN CO. Cleveland, Ohio, Buffalo, N. Y.
KLAUER MANUFACTURING CO. Dubuque, Iowa
HOLBROOK, MERRILL & STETSON
San Francisco, Oakland and Los Angeles, Cal.
SHEET METAL MANUFACTURING CO., INC. Brooklyn, N. Y.

The New Jersey Zinc Company
160 Front Street . . New York City

W. H. ARTHUR COMPANY
SHEET METAL
ROOFING - HEATING

ASHEVILLE, N. C. August 12th, 1926

The New Jersey Zinc Company
160 Front Street
New York, N. Y.

Gentlemen:-

We are very glad to recommend Horse Head Zinc for any job - the bigger the better. We used the above on the - - - - Residence for Conductor Heads and Down Spouts and made a very pretty job. Special leader heads were required, and we found Horse Head Zinc very easy to work.

We feel confident that the job will last indefinitely, and will continue to please the owner. That is why we are always glad to recommend using the above, for it is always satisfactory to those who have used it.

Yours very truly

W. H. Arthur Company

JWA/M

By J. J. McArthur Jr.

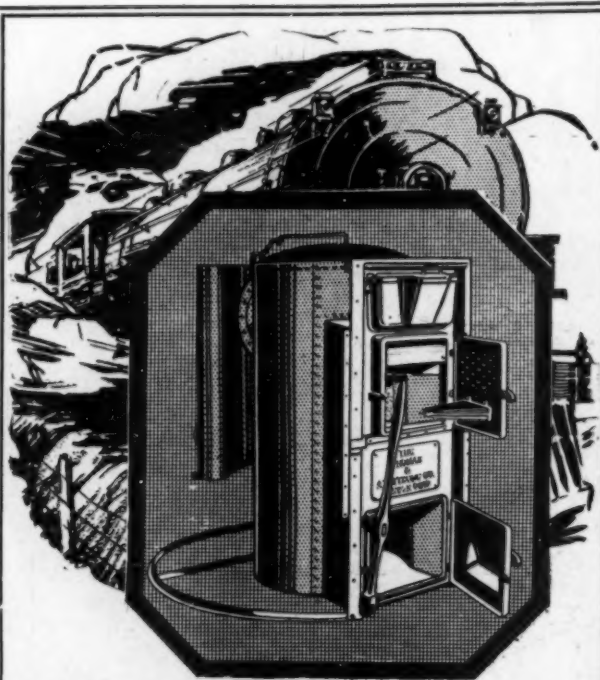
THE NEW JERSEY ZINC COMPANY
160 Front Street - New York City

Please send me a sample of Horse Head Zinc so that I can test its easy working qualities.

NAME _____

ADDRESS _____

12-A



Armstrong Furnaces For More Sales! More Profits!

THE Armstrong Furnace is a business builder that every furnace man should stock. It is good looking, it is quality built, it has exclusive patented features that make it easy to sell. The Armstrong is "built like a locomotive" and then welded and riveted. It is practically a one-piece furnace, gas, smoke and fume tight, with no chance for cracks and warps—and no cement to bother with.

Extra large firepot, oversized radiator, large well-designed dome, grate bars built for heavy duty. Guaranteed for seven years of dependable, trouble-free service.

The Armstrong is the furnace you should sell in 1927 for more sales and more profits. Get all the details of our dealer proposition by writing us today.

THE THOMAS & ARMSTRONG CO.

Dept. 500

LONDON, OHIO

DISTRIBUTORS
A. Y. McDonald Mfg. Co.,
Omaha, Nebr.
Robinson Furnace Co.,
Chicago, Ill.
Heating Supply Co.,
Pittsburgh, Pa.
Cincinnati Sheet Metal &
Roofing Co.,
Cincinnati, Ohio
Stockhoff Supply Co.,
St. Louis, Mo.



*The
Boiler Plate*

**ARMSTRONG
FURNACE**



A line of furnaces
you can sell at all
times—at a profit.

WISE furnaces keep up with the times—not only in design but in market conditions. WISE dealers never have to change their line—**QUALITY IS ALWAYS HIGH** and **PRICES ALWAYS RIGHT**.

WISE furnaces are just plain good first quality heating plants throughout—minus all fancy "frills." WISE furnaces constitute a line of furnaces that you can build business with—making a satisfied customer and a handsome profit with each sale.

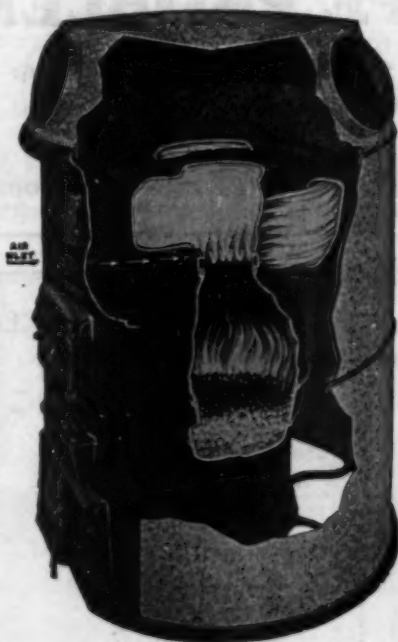
The WISE catalog goes into WISE construction details. You'll find it interesting because it describes a line of furnaces that has been breaking profit-making records for over twenty-five years. Write for your copy today.

The WISE FURNACE CO.
AKRON, OHIO

WISE
BACKED BY OVER TWENTY-FIVE YEARS'
EXPERIENCE IN MAKING GOOD FURNACES
WISE

THE SUPER-SMOKELESS MEANS LARGER PROFITS

THE SUPER-SMOKELESS Furnace is the best investment a home owner can make. It burns the smoke as valuable fuel, obtaining full heat value from the coal. This means a large saving in annual heating costs. It has proved to be a big fuel saver burning hard coal, as well as soft coal. The addition of oxygen at the right place and temperature ignites the gases distilled from the fuel, and, even with hard coal, generates more heat from less fuel.



Cut-away View of
SUPER-SMOKELESS FURNACE

We are now telling the public the big story of clean, efficient and highly economical home heating through the medium of The Saturday Evening Post. The result of this advertising is sure to be a nation-wide demand for this high-grade heating plant which radically cuts fuel costs. There is a big opportunity for the dealer who cashes in on this demand and on the merits of the SUPER-SMOKELESS Furnace.

The SUPER-SMOKELESS Furnace will mean dollars in your pocket. The dealer who sells them is in a distinct class—actually above competition. He can increase his business and get better prices.

Write for full information TODAY.

UTICA HEATER COMPANY

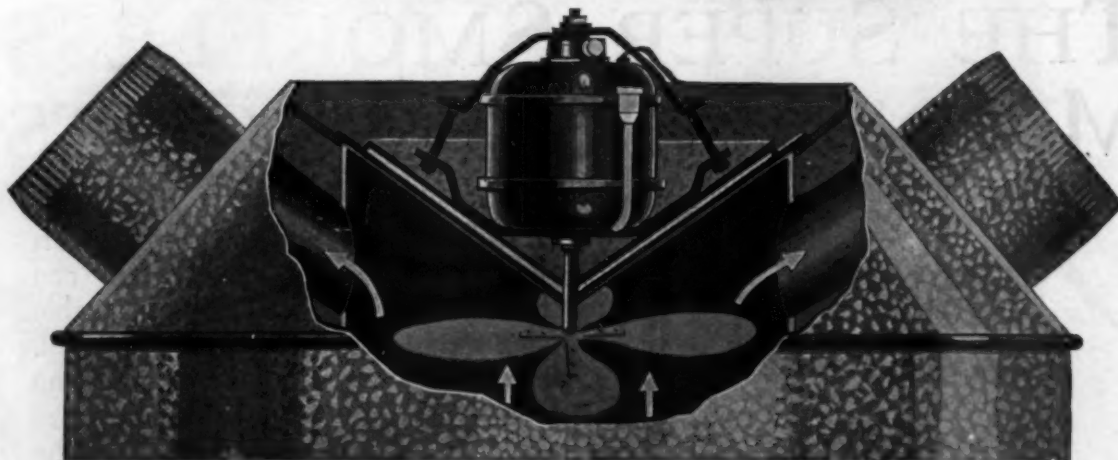
UTICA, N. Y. — CHICAGO, ILL. — MANUFACTURERS OF THE

CELEBRATED LINE OF WARM AIR FURNACES FOR EVERY HEATING NEED



Published Weekly by American Artisan and Hardware Record, Inc., 620 South Michigan Avenue, Chicago, Illinois.
Entered as Second Class Matter June 25, 1897, at the Post Office at Chicago, Illinois, under act of March 3, 1879.

A REGULAR GEE-WHIZZER



THE ROBINSON HEAT DISTRIBUTOR SOLVES THE LONG PIPE PROBLEM

This Fan will insure Uniform Temperature in every room in the house—and do it economically. Can be installed in any make of Furnace.

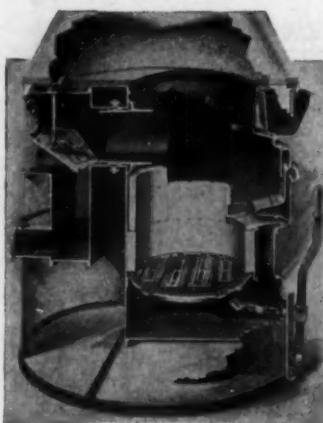
WRITE TODAY FOR DESCRIPTIVE CIRCULAR AND PRICES

5103 DETROIT AVE.

THE A. H. ROBINSON CO.

CLEVELAND, OHIO

The Williamson BOILER PLATE FURNACE



Guaranteed for 10 Years

oxygen directly over the flames, consuming all the heat elements in the fuel. Designed with the demands of the oil burner in mind, making it ideally adapted to any fuel.

Many other attractive features further emphasize the superiority of the Williamson Boiler Plate Furnace. New and interesting sales policy gladly submitted. Make sure of your territory NOW.

The Williamson Heater Co.

Cincinnati, Ohio

In adding the Boiler Plate Furnace to its line, this company is merely extending into the steel furnace field the leadership which it has attained in the manufacture of cast furnaces.

The Williamson Boiler Plate has exclusive features which instantly remove it from the ordinary furnace of this type.

It is all-welded, making it permanent—gas and dust tight. Dome made from copper-bearing, blue-annealed, locomotive firebox steel—radiator made from Armco iron. Double baffle in radiator splits the hot gases into two streams so that all radiating surface is fully utilized—an exclusive feature. Hot-blast smoke-consumer in door and special vents in firebrick lining supply hot

HALL-NEAL VICTOR FURNACES with *FIN* radiation



Patented
Jan. 2, 1923

Heat Every Room

AIR travel in Hall-Neal Victor Furnaces is so rapid that warm air is driven into every heat pipe—and every room gets a positive flow of warm air.

Intercepting Heat Conveyors—(pat. Jan. 2, 1923)—are fine on the furnace body which give this positive heating because they increase 300 per cent the radiating surfaces and offer no obstruction to air flow. They warm the air more and cause much faster air travel, which gives a much greater volume of warm air moved.

Write us today about exclusive sales territories open for good dealers. You can make more money selling this new and better furnace.

HALL-NEAL FURNACE COMPANY

1322-32 N. Capitol Avenue

Indianapolis

Manufacturers of Victor Boiler Plate Furnaces
for more than a quarter century

Sell Satisfaction

—It's Good Business!

We all like to recommend the things that give satisfaction. If John Jones has a fine heating plant he is likely to be very proud of it and tell Harry Smith where he can get one like it. But on the other hand, if it fails to give good heating results his friends will never hear a kind word for the installer.

The "AFCO" dealer knows the value of selling satisfaction. He installs the "AFCO" furnace because he knows it will give satisfactory heating results—not for only one year but for 5, 10, and 20 years. Every owner of an "AFCO" is proud to recommend it to his friends. It brings the "AFCO" dealer more business.

You, too, can sell satisfaction with every installation by installing "AFCO" Boiler Plate Furnaces.

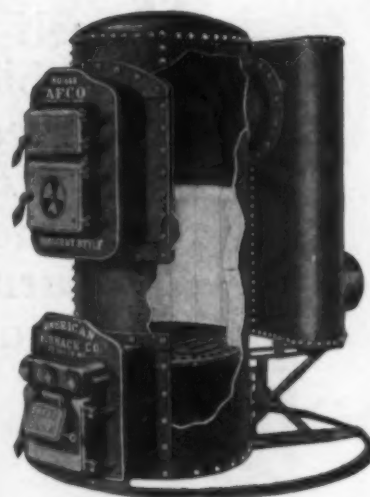
The "AFCO" is one furnace that does not need to be backed by extravagant claims. You can put it against any furnace and in a point by point comparison prove its superiority.

As a good furnace dealer you owe it to yourself to investigate the advantages of the "AFCO" franchise. It is available to only one live dealer in each town.

Write today for complete information.

American Furnace Co.

2719-31 Morgan St. Dept. 44 St. Louis, Mo.



*The Efficient "AFCO"
Crescent Is "Built
Like a Power Boiler."*

The Heater That's Making Steel Furnaces Popular!



**Priced to Compete with Cast Iron
Economical to Operate**

**Practical
Substantial**

**Reliable
Gas-Tight**

"Western" boiler plate

Drop us a line for our special dealer's proposition, including particulars about easy terms, long profits, and the liberal selling helps which we offer.

Complete Stocks Are Carried by These Distributors

SOUTHERN ILLINOIS
American Foundry & Furnace Company, Bloomington, Ill.
KANSAS AND MISSOURI
Kansas City Furnace Company, Kansas City, Missouri.
NEW ENGLAND STATES
Decatur & Hopkins Company, 93 Berkeley St., Boston, Mass.
WEST CENTRAL STATES
Standard Furnace & Supply Company, Omaha, Nebraska.
SOUTHERN STATES
Monierel Furnace Co., Atlanta, Ga.
CALIFORNIA AND NEVADA
Pacific Coast Sheet Metal & Furnace Company, 3200 Geary Street, San Francisco, Cal.

Western Steel Products Co.

130 Commonwealth Ave.

Duluth, Minn.

When writing mention AMERICAN ARTISAN—Thank you!

“The Quality Pipe of mechanical perfection”

WE are the originators of the spring self-locking pipe, the Kwik-Lok adjustable boot and now are about to announce *something entirely new in the Furnace Fitting Field.* Watch for this Announcement in the 33rd Warm Air Furnace Annual of this publication in December.



E. C. DUNNING, Inc. Milwaukee, Wis.



CHICAGO
FURNACE PIPE
AND FITTINGS



All
Sizes
and
Shapes



**Made for Good and Quick
Furnace Installations**

CHICAGO Furnace Pipe and Fittings go together quickly on the job because they are made to fit accurately and stay together perfectly. It comes in single or double of heavy high grade material in all standard sizes and practical shapes. Chicago Furnace Pipe and our complete supply service have been the mainstay of thousands of dealers for over twenty years.

Try our service now. Write for Catalog No. 22 and price list

CHICAGO FURNACE SUPPLY CO.
1276-78-80-82 Clybourn Ave. CHICAGO



**“GEM” ADJUSTABLE
REGISTER
SHIELDS**

Heat that flies to the ceiling is wasted. Sell “Gem” Register Shields, which direct heat where most needed. Attractive and easily adjustable. Fit all size registers. Floor Shield retails at \$1.50; Wall Shield at 75c.

BEH CO

1140 BROADWAY, NEW YORK, N.Y.

BUY FROM YOUR JOBBER

**“American Seal”
FURNACE CEMENT**

**Roof Cement — Stove Putty
Plumbers Putty**

PAINTS and SPECIALTIES

WILLIAM CONNORS PAINT MFG. CO.
TROY NEW YORK

Established 1852
JAMES L. PERKINS
Western Distributor
140 S. Dearborn St., Chicago, Ill.

BOOMER

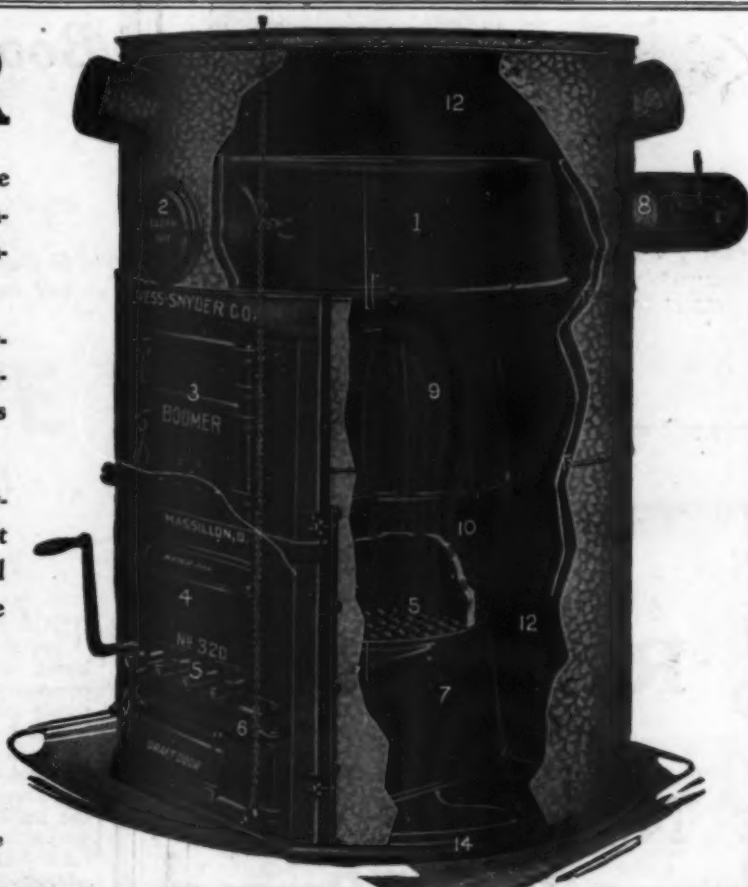
THIS is our latest addition to the Boomer line. We heartily recommend it for your favorable consideration.

The severe tests we have given this furnace have proven its durability. The unsolicited reports we received from users last winter have been most flattering.

For durability, economy, easy to operate, easy to set up and the low price at which we offer this furnace, you will make no mistake in arranging for the agency.

THE HESS-SNYDER CO.
MASSILLON, OHIO

Makers of BOOMER FURNACES for Forty-Three Years



QUEEN FURNACES

for every room

IF YOU are conscientious—if you hold a positive interest in your own future business—if you have the wholehearted desire to entirely satisfy every customer—we would like to have you for our representative. Otherwise you would not be interested in our proposition open to a few.

Queen Furnaces have been designed with but one idea in mind—that of furnishing cheery warmth in EVERY room most efficiently. Such a furnace means positive satisfaction, building an everlasting business with big profits. Unless your installations heat every room your business will be short lived.

Far-seeing men are taking on our reputable heating unit because it fits in perfectly on every job, possesses several exclusive features, provides rapid circulation of air, is suitable to any fuel, guarantees long service by virtue of its fine construction and materials, provides perfect combustion of smoke and gases, possesses efficient humidifier, flat or triangular interchangeable grates and a smoke pipe which can be removed at any angle.

Catalog, agency proposition and merchandising helps on request.

The Floral City Heater Co.
MONROE, MICHIGAN

1654 Monadnock Building, Chicago, Illinois

**IRON AND WOOD
STOVE PATTERNS**
QUINCY PATTERN COMPANY
QUINCY, ILLINOIS

Read the Wants and Sales Pages

P A T T E R N S
FOR STOVES AND HEATERS
VEDDER PATTERN WORKS
FIRST-CLASS
IN WOOD and IRON
ESTABLISHED 1835
TROY, N. Y.

**PATTERNS FOR STOVES
AND HEATERS**
THE CLEVELAND CASTINGS PATTERN COMPANY
CLEVELAND, OHIO

Mention AMERICAN ARTISAN in your reply—Thank you!

AZASCO



Stove Trimmings

anything that can be stamped from metal.
Accurately and beautifully finished.
Prompt deliveries.

May we quote you?

THE
AMERICAN TUBE & STAMPING PLANT
THE STANLEY WORKS
BRIDGEPORT, CONNECTICUT

FURNACE

GUARANTEED
PERFECT FIT

REPAIRS

Large Complete Stock
Accurate Prompt Service

NORTHWESTERN

STOVE REPAIR CO., CHICAGO

BOILER



FANNER
STOVE
AND
FURNACE
TRIMMINGS

For Quality and Service use
Fanner Trimmings. We operate
our own Malleable and Gray
Iron Foundries.

Write today for latest illustrated
catalog which lists and describes
our complete line.

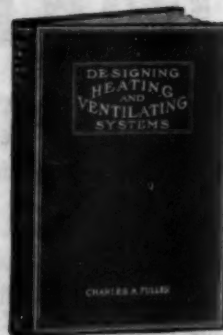
THE FANNER MFG. COMPANY
BROOKSIDE PARK CLEVELAND, OHIO

BOLTS

WE MANUFACTURE A COMPLETE
LINE OF BOLT PRODUCTS, INCLUD-
ING STOVE BOLTS, CARRIAGE BOLTS,
MACHINE BOLTS, LAG BOLTS, NUTS,
COTTER PINS, ETC. ALSO STOVE
RODS, SMALL RIVETS AND HINGE
PINS, CATALOG ON REQUEST.

THE KIRK-LATTY CO.
1971 W. 85th St. Cleveland, O.

Books to read Now!



245 Pages,
6x9 ins.

89 Figures—
Cloth, \$3.00

Designing Heating and Ventilating Systems

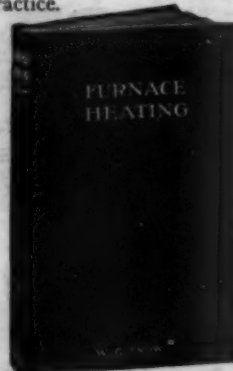
By
Charles A. Fuller
Consulting Engineer

THIS new edition, treats the practical application of engineering rules and formulas in every day use, in laying out steam, hot water, furnace and ventilating equipment for buildings of all kinds, presented in a simple manner.

This book explains the heat unit, foot pound and similar measures in such a way that the less technical mind can readily understand and apply them.

It also explains in detail exactly the same methods that the leading engineers use in determining the sizes and proportions of equipment in every day work. The quickest and easiest methods of determining the proper amount of radiator surface for a room or building of any size are described.

Plumbing and Heating Contractors will find it an invaluable reference book. Every phase of Heating and Ventilating treated is developed along the lines of the most recent practice.



258 Pages,
6x9 ins.

77 Figures—
Cloth, \$3.00

Furnace Heating

By
William G. Snow

Member: American Society of Mechanical Engineers; American Society of Heating and Ventilating Engineers

THIS practical book deals with the different types of furnaces, their design, construction and proper installation, including warm air, combination heating systems, also covering the main features of the one pipe or pipeless furnace.

The author explains in simple English practical information on heating and ventilation of school and public buildings, churches, stores, etc. He also covers the setting up of furnaces, and describes all types of furnace fittings.

AMERICAN ARTISAN
620 S. Michigan Ave., Chicago, Ill.

for---

Rush Service
on

TIN PLATE

for

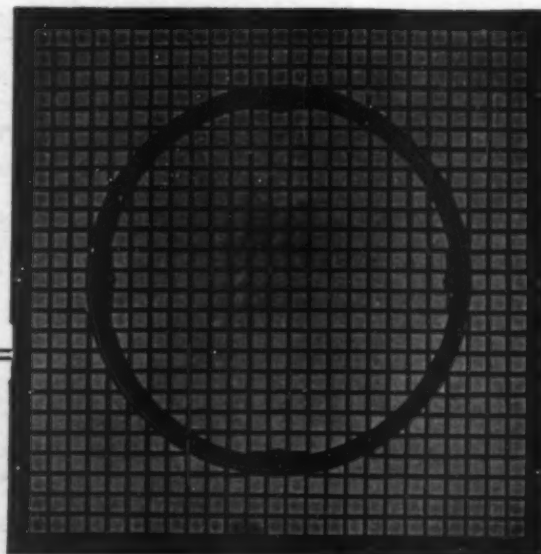
Warm Air Heater
Pipe and Fittings

**SEND
YOUR
ORDER
TO
DAVIS**

*Large
Complete Stocks
of
Diversified Sizes*

TIN PLATE
C. S. DAVIS AND COMPANY, INC.
37TH ST AND IRON ST CHICAGO, ILLINOIS.
TIN PLATE

Warehouses at CHICAGO PITTSBURG-NEW YORK.



*An unusually well made
and carefully finished
pipeless grating*

WALWORTH
Duplex Register

THIS grating is run through the polishing machine *five complete turns* before it is sent to you.

It is by far the most popular pipeless grating on the market and its high quality is the reason.

The Walworth Duplex Grating is made in seven standard sizes from 22x24 to 45x45.

We carry immense stocks at all times in order to supply your needs promptly.

The design shown above is our Plain Lattice Design. It is very strong and durable and unusually neat.

Write today for complete catalog
and price list.

Made by the makers of
Walworth Semi-Steel Registers, Ventilators, Borders, Side Wall and Base Board, Registers and furnace Casing Rings

**THE WALWORTH RUN
FOUNDRY COMPANY**

West 27th Street and N. Y. C. & St. L. R. R., Cleveland, Ohio

Distributors:
ROBINSON FURNACE CO., Chicago, Ill.
HART MFG. CO., Louisville, Ky.
PHILLIPS & BUTTORFF MFG. CO., Nashville, Tenn.

Eastern Representative:
PENN TINSMITH'S SUPPLY CO., Philadelphia, Pa.

Published to serve
the
Warm Air Furnace,
Sheet Metal, Roofing
Stove and Hardware
Industries

Founded 1880

American Artisan and Hardware Record

Yearly Subscription
Price:

United States . \$2.00

Canada \$3.00

Foreign \$4.00

Published EVERY SATURDAY at 620 South Michigan Avenue, Chicago

ADVERTISING AND EDITORIAL STAFF:

Etta Cohn
J. F. Johnson

G. J. Duerr
Frank McElwain

Eastern Representative: 1478 Broadway, New York City

Vol. 92, No. 25.

CHICAGO, DECEMBER 18, 1926.

\$2.00 Per Year.

Table of Contents

Page	Page
Sheet Metal Department.....117-126	The Editor's Page..... 127
Pointing Out the Wrong and Right Ways of Laying the Sheet Copper Roof..... 117	Random Notes and Sketches, by Sidney Arnold 128
Five Columbus, Ohio, Jobbers Crash Through With Turkey Dinner to 700 Sheet Metalers 121	Heating and Ventilating Department.....129-134
Showing Details for Ornamental Gate Lan- tern Pattern 122	A Scientific Discourse on the Relation of the Einstein Theory to Warm iAr..... 129
Reviewing the Accomplishment of the Zinc Industry 122	Describing Heating Drum Invented by Charles Horn, Butte, Montana..... 131
Notes and Queries..... 126	Retail Hardware Doings..... 134
	Room for Hardware Man Here..... 134
	Markets 136

AN ACHIEVEMENT

An explanatory note regarding service to readers of AMERICAN ARTISAN. This paper is now nearing the completion of a half century of service. For almost fifty years it has catered to the needs of the men in the industries which it represents. At no time during its long and successful career has AMERICAN ARTISAN been in a better position to render complete, adequate service to its readers than it is today. In addition to the matter contained in our regular weekly publication, we maintain Service Departments for the use of our readers. If you have a problem to solve, we courteously invite you to submit it to us for solution. In what better way can we learn of your problems than from you direct?

American Artisan

33rd Warm Air Furnace Annual
will be in the mail
December 25th
Watch For It

STORIES with illustrations showing the warm air heating contractor unusual, successful and high grade warm air furnace installations—inspirational and educational.

Articles by experts giving facts and figures as to the latest developments in warm air furnace heating.

Nation wide data and comment regarding the warm air furnace industry (from all angles) from manufacturers and dealer-contractors.

Special articles dealing with the business outlook for 1927.

Stories covering the advertising, selling and installation of warm air furnaces, illustrated. In all an exceptional edition edited to present to the industry a meaty, inspirational and attractive annual.

Be sure you get this big annual issue.

The cover is in three colors showing the Research Residence at Urbana.

It is an issue you'll greatly enjoy reading.

AMERICAN ARTISAN

620 South Michigan Ave.

Chicago, Illinois

We Mean It!





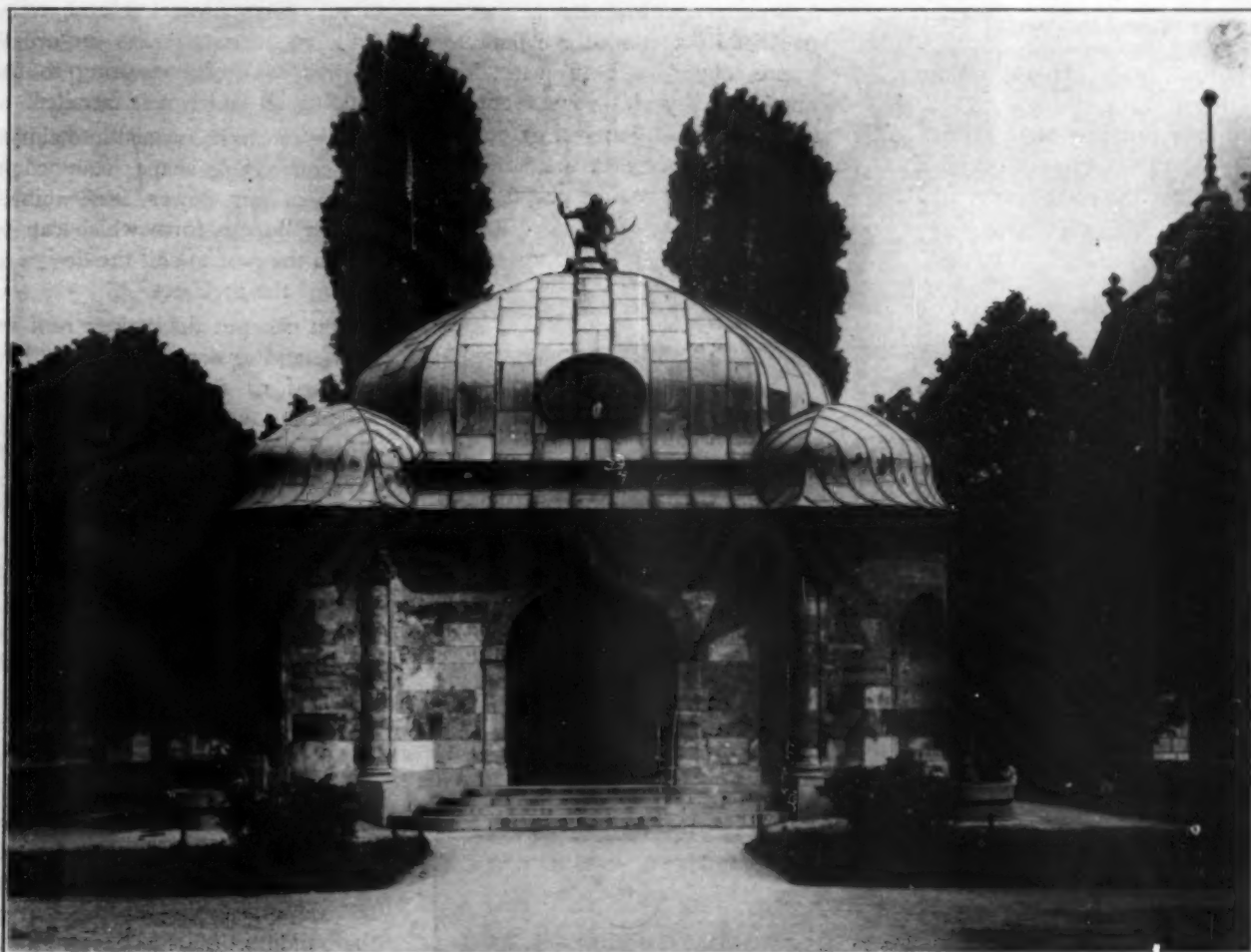
American Artisan and Hardware Record



Vol. 92.

CHICAGO, DECEMBER 18, 1926.

No. 25.



Hulbertus Fountain, Munich, Germany, with a Copper Roof

Pointing Out the Wrong and Right Ways of Laying the Sheet Copper Roof

W. H. Tinney Finds Soft Copper Lends Itself Readily to Temperature Stresses on Roof—Recommends Hard Copper for Cap Flashings

COPPER is a metal that has been used for many generations for various roofing purposes. From the following list of noted buildings, with their dates of construction, you can form your own conclusion as to the merits of copper for roofing purposes.

Nagoya Temple, Japan.....1411
Temple of Heaven, Peking...1420

St. Peter's Cathedral, Rome...
..... 1503-1882
(Valley flashing and decks)
Bourse, Copenhagen, Denmark
(Tower)1619
Rosenberg Castel-Copenhagen,
Denmark1625
Kronberg Castel - Helsingfors,
Finland1635
Fredensborg Castle, Fredens-

borg, Denmark1720
Christ Church, Philadelphia..1758
Customs House, Dublin, Ire-
land (dome)1791
Upsala House, Germantown,
Pa.1798
(Gutters and Leaders)
Drottringholm Castle, Lake
Maiar, Upland Sweden....1800
Dome of Capitol, Jackson, Mis-

Mississippi1839
 York Minster, York, England.1842
 Madeline Church, Paris,
 France1842
 Trinity Church, New York...1846
 Dome of Capitol, Boston,
 Mass.1855
 Dome of British Museum,
 London1857
 Boston State House, Main
 Roof1887
 Pulitzer Building New York..1889
 St. Mary's Cathedral, Visby,
 Gotland, Sweden1889

New York Stock Exchange..1921
 Camden Terminal, P. & R. R.
 R.1923
 Times Annex, New York...1923
 Philadelphia Public Library...1924
 Towers of Delaware River
 Bridge, Philadelphia, Pa....1925
 Now, gentlemen, after giving you
 this list of a few of the buildings
 where copper has been in use for a
 number of years—some for cen-
 turies—I think you will agree with
 me that copper is a material that,
 when used for roofing purposes and

best material that can be used for
 roofing; and a material that will
 stand the extremes of heat and cold,
 to which roofing is exposed, for a
 longer period of time than any other
 metal that can be used.

It requires no paint or other pre-
 servatives to protect it and, when
 fully weathered, makes an ornate
 as well as useful covering to the
 building on which it is installed.

Copper can be formed into almost
 any conceivable shape; stamped to
 represent any flower, leaf, animal,
 bird or human form which can be
 put on the roof to suit the design or
 wish of the architect.

You can put the copper roof on
 with standing seam, flat seam, bat-
 ten roof or false batten roof, to
 obtain the effect desired.

Our company just installed the
 roof on two church towers, the
 seams were put on diagonally, with
 large seams only partly hammered
 down, to give the roof the effect de-
 sired by the architect. So you can
 see you can get, as I said before,
 any conceivable shape or design in
 copper for roofing purposes.

Lead-Coated Copper

Also, in a number of cases we
 have used copper that was lead
 coated, where the architect felt that
 the bronze or copper color would
 not conform to the architectural
 scheme or coloring of the rest of
 the building. This lead coating has
 been put on by the copper mills in
 such a way as to represent a cast
 surface, which has been very sat-
 isfactory.

This lead coating does not shorten
 the life of the copper in any way.
 On the contrary, it adds from four
 to six ounces of material to the
 square foot and, of course, makes
 it last longer.

Thus, as I have tried to show
 you, copper is a good material to
 use for roofing purposes. We will
 now get to the question of "The
 Proper Method of Laying Copper
 Roofing."

Of course, methods differ, and
 whenever a body of sheet-metal men
 gather there is always discussion. I
 have found many differences of
 opinion as to the best methods of



Zwinger Wall Pavillon, Dresden, Sheet Copper Roofed

Bristol County Court House,
 Taunton, Mass.1896
 Havemeyer Chemical Labora-
 tory, Columbia University,
 New York1897
 Ferry House, Penna. R. R.,
 Philadelphia, Pa.1898
 Hotel Astor, New York.....1905
 Cathedral of St. John the De-
 vine, New York1907
 Woolworth Building, New
 York1912
 Grand Central Terminal, New
 York1912
 Cupola, City Hall, New York.1917

properly applied, will last as long
 under ordinary conditions as the
 building.

However, I would not suggest
 that copper will last forever, under
 any and all conditions, because I
 do not think so. As you know, in
 certain localities, there are fumes
 and gases emitted from smoke
 stacks, and other chemicals in the
 air, that will destroy any metal that
 is used for roofing purposes.

Copper Best Roofing Material

But, as far as my limited knowl-
 edge goes, I think that copper is the

doing the mechanical work. That is as it should be. There is little difference, however, in the fundamental principles of laying copper. Some of the differences that do exist are of great importance.

First of all comes the old, old question of soft and hard copper—which is best? I favor soft copper, because it is easier to work than hard, it is lower in first cost, and it is more ductile and probably lends itself better to temperature stresses.

Now, hard copper is an excellent material for cap flashings, and in similar places where stiffness is necessary. But where two kinds of material are used for one job there is usually confusion and waste. Soft copper can be safely used for all purposes except, of course, cornices and molded gutters, where stiffness is essential.

Weight Should Be 16 Ounces or Heavier

The weight of copper sheet is another important question. Some advocate 14-ounce copper. I feel that this is too light and will not give the service demanded of copper. So well is this recognized that recommendations were made recently by a committee of manufacturers that the fabrication be discontinued of gutters, leaders and accessories in 14-ounce metal. Copper heavier than 16-ounce can be used and should be used under certain conditions. Many architects will specify nothing lighter than 18-ounce. Certainly 16-ounce is none too heavy. There is no saving in price of 14-ounce over 16, for the difference in the cost of manufacture makes it necessary for the rolling mill to charge a higher extra. Moreover, the necessity of carrying a double amount of stock adds materially to the price. Fourteen-ounce copper has disappeared in the East.

But how to lay a copper roof properly is a question that can only be answered after a close and careful study of the different methods in use for a number of years, what reactions have taken place over this period on the copper and on seams.

Use the best of the several different ways.

Copper, as you know, is a mineral taken from the earth, sifted, smelted and purified through different processes, after which it is fabricated into the sheets that we are to use on the roof.

We all know copper expands and contracts, from the heat and cold, more or less the same as any other metal. Knowing that we have expansion and contraction of the metal, also of the surface to which cop-

rected to the fact that they are making a mistake in using poor lumber under a good roof. Just as the man who puts a good building on a poor foundation is making a mistake.

I know of a few instances, where copper was placed over poor wood, where the foundation had rotted out completely leaving the copper suspended. You can see that it was false economy to have used cheap lumber under the copper; as it will be necessary to take off the copper



Church of Notre Dame, Dresden, Germany, roofed with copper

per is applied, conditions are presented over which we have no control.

Good Foundation Vital

Before he starts, the man laying copper roof should look over the foundation of the roof and see that all surfaces are reasonably smooth. If you have a wood foundation for the roof, the wood should be properly seasoned, of a good grade of lumber, not the cheap lumber that will rot out in a few years.

If the cheap grade of lumber is specified, attention of the builder, architect or owner should be di-

rected to the fact that they are making a mistake in using poor lumber under a good roof. Just as the man who puts a good building on a poor foundation is making a mistake. I know of a few instances, where copper was placed over poor wood, where the foundation had rotted out completely leaving the copper suspended. You can see that it was false economy to have used cheap lumber under the copper; as it will be necessary to take off the copper roof and install a new foundation. This, of course, will be an expensive job. This happened on a \$5,000,000 office building in one instance and, in another, on very nearly as large a building. So you can see that if they had spent a few hundred dollars more in the beginning—which is a small item compared to the cost of the building—they would have saved a couple of thousand, which they are obliged to spend now. A wood foundation should be well nailed to rafters which are placed close enough together to give a reasonably rigid foundation.

When other foundations are used, such as concrete, gypsum or other compositions, care must be exercised here also. See that they are smooth and graded, also that they have been properly mixed; so that when you put your nails into the foundation you will be reasonably sure the nails will hold and stay put.

I always recommend using a good rosin-sized paper under copper roofing. This absorbs the moisture of condensation on the underside of the copper. Copper produces a small amount of condensation moisture, the same as any other metal will do.

After the foregoing precautions are taken care of you are now ready to install the copper roofing.

As you are well aware, when copper is used for roofing the first requisite is for it to be weatherproof—in some cases ornamented as well—

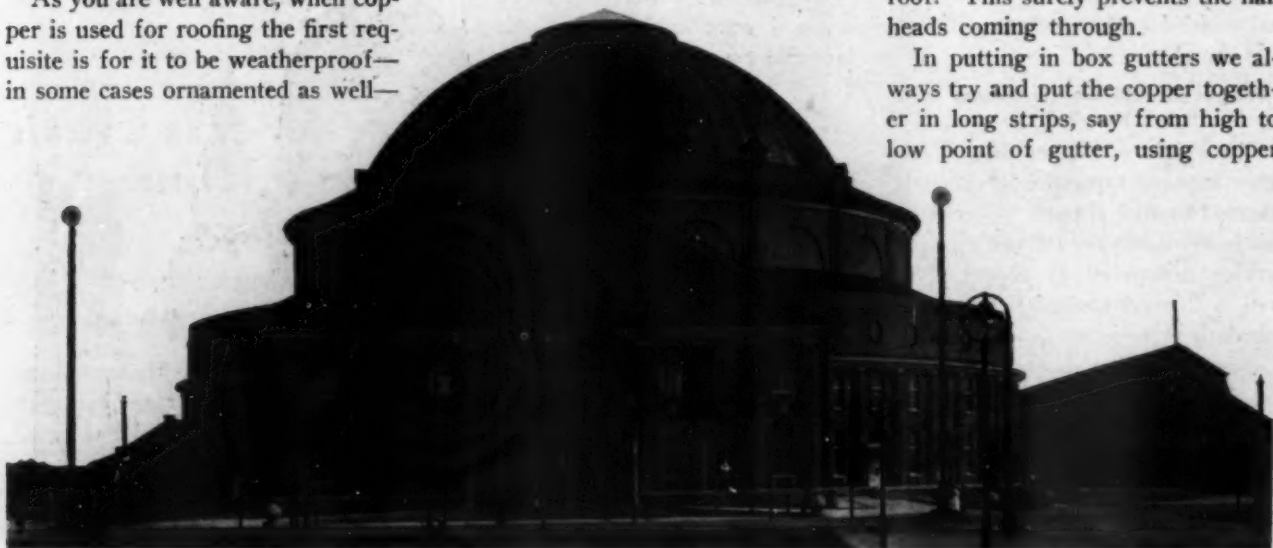
for this expansion and contraction in your installation. I believe the use of crimped copper will solve a great many of your troubles. I recommend the crimping of all copper used for roofing purposes.

In crimping copper, using the 3/16-inch crimp, you will find that, after the copper is laid, the crimping acts as a bellows; which take up the expansion and contraction. The crimps should run with the short dimension of the sheet. They are not deep enough to hold water and give no trouble from freezing. Used in gutters and on decks, crimped copper is excellent. The additional cost for crimping is very small. Many sheet metal firms doing cornice work have in their shops a machine for this purpose.

heavy as when using a single lock. Which will about even up the additional cost of using the copper lock. Also, by using the copper lock, I think you are safe in using long sheets. There is a diversity of opinion as to the proper size of sheets.

Copper should never be nailed through the sheets. Always use cleats about 1-inch wide. Cleats should be about 2½ to 3 inches long, nailed with two copper nails to each cleat, and spaced about 8 inches to 10 inches apart. Care should be taken to see that nails are driven straight and tight so that the heads will not cut through the sheet. It is good practice to fold the surplus end of the cleat back over the nails, and hammer down tight to roof. This surely prevents the nail heads coming through.

In putting in box gutters we always try and put the copper together in long strips, say from high to low point of gutter, using copper



Festival Hall, Hanover, Germany, Roofed with Copper

so the first thing to think of is to install copper in a weather-tight manner. But, when you install it in a weather-tight manner, you should consider it necessary to install it in such a way that it will remain weather-tight over what you might call an indefinite period. How to do this is what I am going to try and tell you.

Crimped Copper Advised

In the first place, copper expands and contracts. You cannot get away from that. The building itself, or the foundation of the roof, also expands and contracts; and you cannot help that either. So the only thing to do is to provide

Copper Lock Seam

As additional provision against effects of expansion and contraction, and to insure a weather-tight result that will endure for the longest possible time, I recommend the use of the copper lock seam in addition to crimping. I think using the copper lock is one of the best methods there is to take care of expansion and contraction.

A copper lock is a double fold instead of a single fold which is used. By using this copper lock, while you use more copper in making this lock, you do not have to solder on steep roofs; and on flat roofs you do not have to solder nearly as

lock well soldered for all cross seams. By doing this, you have only a few seams to make in the field and at the best part of the gutter where the water runs away quickly from such seams.

Laying Flat Roofs

In putting on flat roofs, I have used two methods. One, using small sheets about 14-20, cleating and soldering them, with very good results. Also I have used the large sheet method, using 24x96 sheets crimped, with copper locks both ways, and have had very excellent results after several years of usage. By using this latter method, we did not have to solder the seams nearly

as heavy as when they were laid with single locks. In using this method, as you can see, we laid the copper on the roof in a loose fashion, allowing the copper to expand and contract at will. The crimping acting as a bellows, prevented the copper from gathering at one point and cracking, as it usually does when laid flat without crimping.

I had a talk with Mr. Gowan recently, of the Copper and Brass Research Association. He has inspected hundreds of copper installations throughout the country. Among them was the State House roof in Boston, where there is laid about four acres of copper roofing. It was laid in 1890, and outside of a few minor repairs, where fumes from smoke stacks have caused trouble, this roof is very satisfactory. The remarkable part of it all is, that this roof has practically no solder, the seams being made with white lead. Another job, the Produce Exchange in New York, has a copper cornice, the top of which is over 6 feet wide covered with copper, the seams having been made with white lead also. This method, as you can see, is economical. As these jobs are both in sections where they have heavy snow falls, and are satisfactory, I think we, as sheet metal men, should investigate this and try a couple of jobs as experiments, and see what reactions will occur with this method of installation. One thing is sure. Expansion and contraction is taken care of by the use of white lead in the seams, and I am sure with the copper lock and white lead seams you will have a weather-tight roof. If this can be proved to be a successful method of laying a copper roof, I am sure more people would use copper. You can readily see that a copper roof laid with white lead would be considerably cheaper than it is at present.

Now gentlemen of the sheet metal industry, while I have been "boosting" copper, I don't want you to lose sight of the fact that, when called upon to put sheet metal on any roof, you should impress upon your customer that he should use

the best and not the cheapest grade of material; whether it be tin, zinc, iron or copper or slag. It is then your duty to see that the material is put on properly.

Our national, state and local associations of sheet metal workers are striving with all their resources to educate the public in the advantages of using more sheet metal in the building industry. It is the duty of every sheet metal man in the industry to get behind their association to further this effort.

Pennsylvania Convention

While on the floor, I want to remind you of the State convention to be held in Bethlehem. Every sheet metal contractor should make a special effort to be there. The association needs your support and you need the results of giving it. Also, I want to claim your interest for the use on your stationery and

otherwise, whenever possible, of the sticker carrying the national slogan "Use Sheet Metal for Beauty and Permanence." It is by wide and sincere interest in such things that our business will advance more rapidly.

Now another matter, before closing, I want to call your attention to the 150th anniversary of Independence that is being celebrated by the Sesqui-Centennial Exposition in Philadelphia this fall. It is the finest exhibition of its kind ever held. The citizens of Philadelphia invite you to visit and inspect this exhibition, there are ample accommodations for every visitor. You will find, after spending ample time in viewing the wonderful exhibits there from every corner of the world, that you will be well repaid for your visit.

Wish you a Merry Xmas.

Five Columbus, Ohio, Jobbers Crash Through With Turkey Dinner to 70 Sheet Metalers

Over 20 Non-Members Present on December 13, 10 of Whom Signed Up as Members

THE membership bell was again loudly clanged by the Sheet Metal Contractors' Association of Ohio on December 13, when ten new memberships were added to the already large list at a get-together turkey dinner given in Columbus, Ohio, by five Columbus jobbers to over seventy sheet metal men, according to Secretary W. C. Abbott.

National Secretary W. C. Markle Present

The visitors came from Zanesville and other points near Columbus and among them were over twenty non-members.

The dinner was accompanied by orchestra music and "pep" talks by National Secretary W. C. Markle and C. L. Bailey of the Sheet Steel Trade Extension Committee.

"We are going big in Ohio," said Secretary Abbott, and to view the program which the association has mapped out for itself for future get-together meetings, the truth of

this statement is readily recognized.

On December 23rd similar meetings to the one held in Columbus will be held in Dayton and Springfield; January 3rd, Canton and Alliance; Cleveland, January 5th.

The state convention will be held in Columbus, Ohio, February 23, 24 and 25 at the Neil House. "Absolute management of the convention," said Secretary Abbott, "is in the hands of A. P. Lamneck. The program will give to visitors the greatest convention of all times. It will be constructive in nature from start to finish, the intention being to give the contractors who attend ideas and education that they can carry home and put into practice in their work.

"Particular attention will be given to the entertainment of the ladies. There will be no stag parties. Business and entertainment every minute of the time the guests are in Columbus."

Showing Details for Ornamental Gate Lantern Pattern

General Principles for Developing Miters for Octagon Applies on This Layout

By O. W. KOTHE, Principal St. Louis Technical Institute, St. Louis, Missouri

ORNAMENTAL lanterns, as we show in this drawing, are being used more and more each year. It is not all sheet metal workers who get to work on them, since much of this class of work is done by ornamental brass manufacturers who attend to designs as well as the working out, making up and erection of the work. The design I show here was sent me by one of my friends, Mr. Schneider, of Detroit, and I think is worthy to be shown to the readers of *AMERICAN ARTISAN*.

Observe that the lantern proper is hung on the cast bronze bracket shaped to a scroll, as the side elevation shows. The front by the dotted lines indicates the width and also how it is attached to the brick work and how the lantern proper is fitted in place.

This lantern is made up to an octagon shape, having a door on the one side for changing globes and cleaning purposes. For such work the general principle of developing miters for an octagon, whether for lanterns or gutters or cornices, or vases, holds good.

We next draw the elevation to a size specified, seeing to it that all lines are accurately placed and uniform, and then we draw the part plan giving the octagon miters. In this case we develop the top from the left hand miter and the bottom of lantern from the right hand miter in plan.

This is a simple process of dropping lines from points in front elevation, as 1-2-3-4, etc., into plan. To cross the miter line 1-10. Next pick the girth from elevation and set it off, as 1-17 to the right of our drawing on the center line of plan. Draw stretchout lines and then from each point in the miter line carry over horizontal lines or points

to cut off those stretchout lines in pattern of similar number which gives the intersection for sketching in the outlines for miter cuts. The same holds true for the pattern of base where all curved lines are divided in any number of equal parts and these are dropped down into plan miter line.

Next take the girth from the elevation and set it off to the right and develop the pattern as before.

The body part of lantern is very simple, being made up of flat bars hemmed similar as is shown to the right of drawing, into which the glass is placed whether plane, beveled or art glass. This is a class of work that more sheet metal men

should cater to, especially so since architectural cornice work is being revived and it is an asset to any man's ability to be able to do something that is neat and clean and artistic.

Folks who do nothing but roughing in work all the time never have anything to boast about or receive compliments or any satisfaction such as is the case when a better class of work is met with and there is satisfaction and pride to be gained from it. All soldering should naturally be done on the inside of this lantern and all miter edges should butt edge to edge and later be filed to a sharp smooth well defined line.

Reviewing the Accomplishment of the Zinc Industry*

Industry Has Removed Inferiority Complex and Is Now Known by Its Right Name

By STEPHEN S. TUTHILL

YESTERDAY a gentleman attending these meetings asked me how it happened zinc was being featured for two days in succession upon this splendid program of the congress.

My answer was:

First: Because the American Mining Congress and its secretary, Mr. Callbreath, are staunch friends of the American zinc industry.

Secondly: Because shortly after the industry had formed its national trade organization we psycho-analyzed zinc and removed an inferiority complex.

*Address by Stephen S. Tuthill, secretary, of the American Zinc Institute, Incorporated, delivered before the 29th annual convention of the American Mining Congress, at Washington, December 8, 1926.

now taboo not only in the institute, but also in all government bureaus and in the trade and general press.

When a nickname is given to an eighteen karat gold ring, containing 75 per cent of pure gold and 25 per cent of other metals, there will be some sense in calling zinc, containing at least 98 per cent of pure zinc and 2 per cent of other metals, an alloy, and giving it a nickname.

Calling Zinc by Its Right Name Helpful

Suffice it to say, if copper is copper, and tin is tin, zinc is zinc.

The removal of that inferiority complex, and the calling of zinc by its right name, ladies and gentlemen, have been two of the most important factors in bringing the American zinc industry into the

Thirdly: Because we had then proceeded to cure zinc of a retarding disease, diagnosed by the experts as "spelteritis."

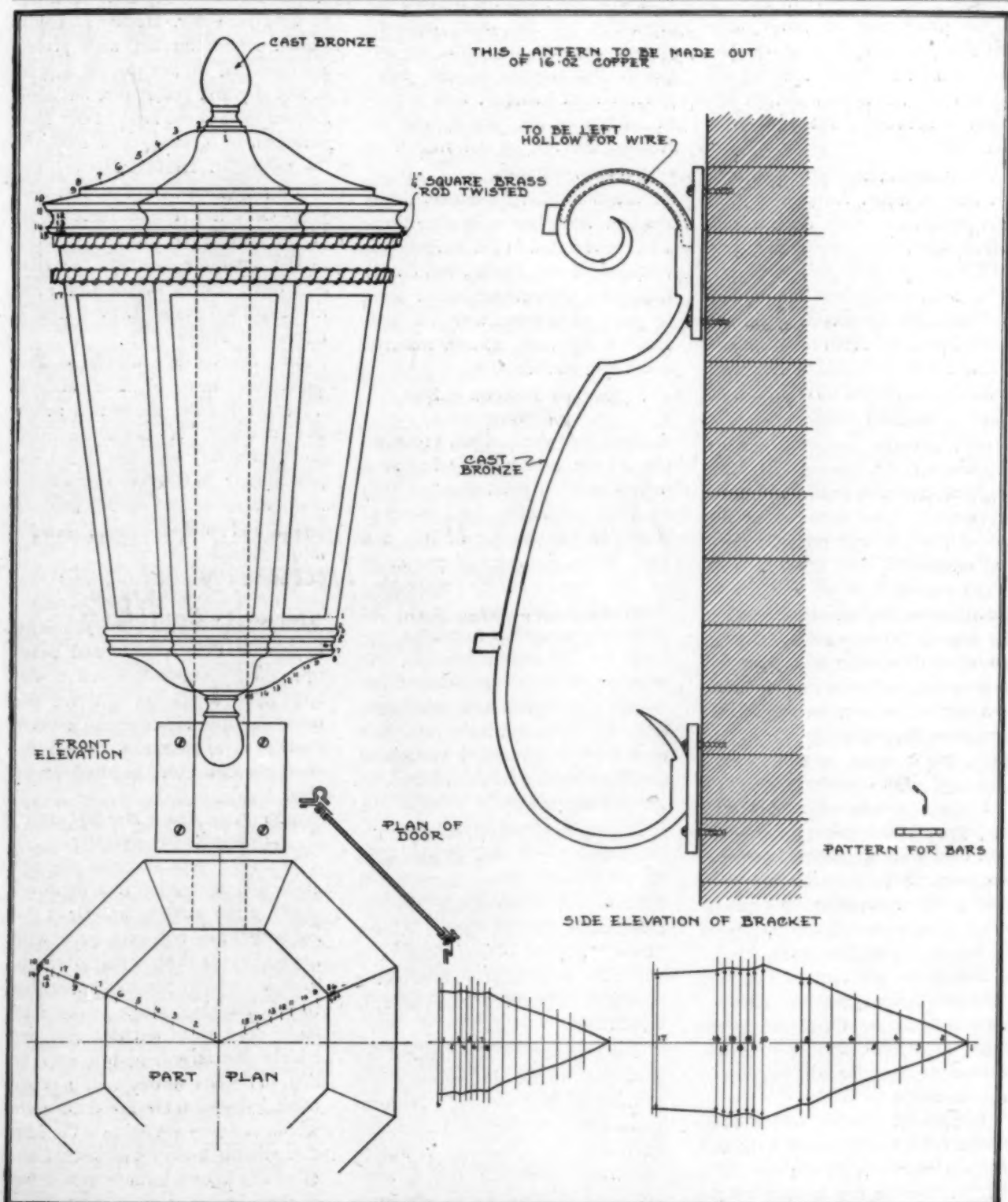
The archaic word "spelter" is quarter of a billion dollar annual production class.

And here let me say that the na-

tional organization of the zinc industry avoids, as far as possible, the use of the terms "miners" and "smelters," for when these men are enrolled in a national organization they become "zinc men," just as all the men engaged in the making of steel are known as "steel men." No

national trade organization can adequately deal with the problems of a national industry unless its members are nationally conscious in respect to their industry.

Now, let us get a few figures out of the way. Here are the estimates for 1926:



Details for Ornamental Lantern

The production of concentrates in the Joplin-Baxter Springs-Picher-Miami district continues to maintain its relation to the production of slab zinc, roughly, two-thirds of that smelted in the United States and one-third in the world.

Seventy-five per cent of our available zinc retorts are in use.

Our production of retort slab zinc this year will be over 630,000 tons—a little less than one-half of the world's production, and an increase of between 7 and 8 per cent over 1925.

The United States produces and consumes a larger tonnage of zinc than any other country in the world.

Our sheet zinc production last year increased 17 per cent over 1924, and was going strong this year until the automobile manufacturers began to curtail their output.

Exports of slab zinc in 1926 will probably not exceed 43,000 tons, or 50 per cent under 1925.

The increased consumption of slab zinc at home, however, has kept the total shipments in line with total production. The statistics at the end of the year will probable show an increase of only 7,000 tons in stocks over 1925.

Estimating the stock on hand at the end of this year at 17,000 tons, we shall then have less than ten days' supply of slab zinc on hand, in a market that is absorbing 52,000 tons monthly.

Big Increase in Home Consumption

Ten per cent of our zinc is used in pigments and salts, the production of which increased 20 per cent last year. Several of the zinc companies are accelerating the development of zinc oxide and lithopone branches of their business.

Nearly 30 per cent of our slab zinc production goes into alloys—principally brass. Of course, as the brass industry continues to grow, the use of slab zinc will increase in that direction.

In passing, one-half of the 1,600 alloys listed by Professor Campbell contain zinc. With the exception of 67, zinc is not a part of the identifying name. Unfortunately,

this is a situation which is absolutely beyond correction.

Practically one-half of the production of slab zinc is used in galvanizing, or zinc coating. Last year's increase in the use of zinc for coating purposes was 20 per cent greater than in 1924.

Several years ago the national organization of the zinc industry opened negotiations with the national organization of the independent steel industry, with a view of improving the quality and increasing the sale of galvanized, or zinc coated, material.

Parenthetically, the efforts which are now being made in this direction are reflected in the national advertising of the Sheet Steel Trade Extension Committee, and I trust in your experience with the galvanized, or zinc coated, material now being marketed.

Important Progress in Zinc Coatings

Since then the national organization of the zinc industry has been instrumental in the formation of a sectional committee on specifications for zinc coating of iron and steel, under the rules of procedure of the American Engineering Standards Committee, and the sponsorship of the American Society for Testing Materials. As secretary of that committee, I can assure you, ladies and gentlemen, that its sub-committees are fast coming to an agreement on national specifications for all galvanized, or zinc coated, material.

The national organization of the zinc industry is a joint sponsor with the American Society for Testing Materials in standardizing zinc, in coöperation with the Belgian Standardization Association, also under the rules of procedure of the American Engineering Standards Committee.

The secretary of the national organization of the zinc industry is a member of Mr. Hoover's National Committee on Metals Utilization, organized to promote voluntary coöperation between the government and industry, to eliminate waste through simplification of

dimensions, and to establish standards and specifications. This in connection with the Division of Simplified Practice of the Department of Commerce, with the splendid work of which all of you are doubtless familiar.

At this time I think it is right and proper for me to say that those of us who read Mr. Hoover's recent annual report thrilled with pride, not only that we are playing a part in this day and generation, but also that we have at the head of our Department of Commerce a man of the caliber of Herbert Hoover.

It is estimated that in the last few years there has been an increase of 15 per cent in the recovery of zinc in the Tri-State District, the zinc men there heartily coöperating with the experts of the United States Bureau of Mines.

Mr. Mackenzie's article in the September issue of *The Mining Congress Journal* states that selective flotation, in extracting zinc from refractory ores, has added approximately \$6,000,000 annually to the receipts of the mining men of Utah, and turned annual deficits into dividends.

Through the United States Bureau of Mines, or on their own account, the zinc men are continually improving their retorts and practices. The president of one of the large zinc companies told me the other day that his company expects shortly to announce a radical recovery advance in the smelting of zinc.

To Bring About Meeting of Minds in Zinc Industry

There are some zinc men who are under the impression that improvements in the smelting branch of the industry have not kept pace with improvements in the mining branch. That is probably due to the fact that retort smelting plants, producing 80-85 per cent of our slab zinc, are widely distributed, and it may be that, in the zinc industry, as in many other industries, there are members who are not as yet sold on the idea that what one knows plus what another one knows is more than either of them knows.

At this point I do not consider it

amiss to say that the adjustment committee of the national organization of the zinc industry is today conferring in St. Louis with a view of bringing about a meeting of minds in the zinc industry.

Although the national organization of the zinc industry is publishing an authoritative monograph on "Zinc and Its Corrosion," questions continually arise that can be answered only through research by the zinc industry as a whole.

This is true of many other trade organizations, is it not?

Hugh Farrell, financial editor of the *New York Commercial*, in his book, "What Price Progress," says: "There is not an industry which is not in danger of waking up tomorrow and finding that the chemist has made a discovery that has revolutionized it." As business men, you know of such instances as well as I do.

The Germans outdistanced the world because German industrialists had sense enough to give German scientists a free hand and unlimited financial support.

It is true that splendid research work is being done by individual corporations here and there, by trade organizations through university affiliations, and by that magnificent organization presided over by Dr. George K. Burgess—the United States Bureau of Standards.

American Business Man Asleep to Foreign Competition

As you know, Mr. Hoover has several times spoken to the American business man in no uncertain tones upon this vitally important subject.

Taking industry as a whole, however, the average American business man is asleep to the fact that the foreign competition which is bound to come sooner or later will be based upon processes that have been scientifically analyzed to the nth degree from the angle of lowest unit cost.

It is reliably stated that books and trade literature upon American factory methods and technique are today being devoured by the Germans.

If proof is need as to the recovery of European business, may I suggest that you read the address of Dr. Julius Klein, director of the Bureau of Foreign and Domestic Commerce, before the National Credit Men's Association in New York last month.

Here is one of the things which Dr. Klein said: In many ways the most interesting and convincing evidence of increasing stability and sobriety of European business is the spread of the international cartel, or combine. There are now 12 such groups over there, with several others in contemplation. Of course, these were formed for the purpose of curtailing ruinous competition, or stabilizing the market.

Already steel, copper, zinc, quick-silver, aluminum and other minor metals, and minerals are being closely group-supervised on the continent.

Such combinations are forbidden by law in this country. As mineral, metal and other markets are world markets, it is difficult to understand why American business men should not be strenuously insisting upon the same rights as are accorded to other economic elements in our body politic.

Departments of Government Simply Complying with Law

Instead of endeavoring to remove this brake upon our economic progress, are not too many of us prone to take a fall out of the Department of Justice and the Federal Trade Commission at every opportunity. From my own experience, I know that the officials of both of these splendid government organizations are simply complying with the law as it applies to present day business conduct.

You know as well as I do that our anti-trust laws were passed by Congress, and that our only relief rests with Congress. Such relief seems no more impossible than did the task which confronted the railroads of this country in very recent years, in changing a hostile public opinion to a friendly public opinion. Business today is so generally organized, through chambers of com-

merce and trade associations, that a federation of all of these business organizations, properly organized and conducted, would, in my opinion, ultimately bring about a relief that is bound to become more and more vital to American business success.

I regret that lack of time prevents elaboration of this subject.

Zinc is one of the most pervasive of metals, but time precludes my pronouncing my favorite eulogy upon it. Suffice it to say that zinc is with us from the cradle to the grave. Zinc is, however, a long way from the cradle, and a much greater distance from the grave.

The future of the American zinc industry, like that of all of our other industries, rests not in the lap of the gods, but in the hands of those who produce and consume zinc—a relationship that can be improved only through coöperation and coördination among the producers of zinc and an appreciation of the sterling qualities of zinc by the consuming public.

Guy and Howard Holt, Perryton, Texas, Purchase Cook Sheet Metal Shop

Guy E. Holt and Howard Holt, Perryton, Texas, have bought the Cook Tin Shop from M. A. Cook, the new firm taking possession immediately.

The tin shop was formerly owned by Guy E. Holt, who sold it to Mr. Cook about a year ago. However, Holt has been in the employ of Mr. Cook for some time and will continue to handle the business. Guy Holt will continue to have his office at Hutchinson, Kansas.

The new firm will be known as Holt Brothers, sheet metal contractors.

Walter Durst Opens Sheet Metal Shop at Comfort, Texas

Walter A. Durst, Comfort, Texas, has opened a sheet metal shop with the Faust Manufacturing Company and is prepared to do all kinds of sheet metal work.

J. E. Singer & Son Crash News Columns of Home Town Paper

For the encouragement of warm air furnace installers who consider it impossible to get the coöperation of their home town newspapers editorially, here is an item which appeared in a recent Sunday issue of the Middletown, Ohio, *Journal* under the heading, "Sheet Metal and Furnace Concern Here."

"Backed by thirty-five years of experience in the firm of J. E. Singer & Son, at 918 Central avenue.

"During that thirty-five years the firm has kept up with every branch of progress in their line of business.

"The most modern of equipment for all kinds of sheet metal work, this firm is ready to handle, in a workmanlike manner and with promptness, any jobs in copper, zinc, aluminum and tin.

"Singer & Son are agents here for the famous Weir steel furnaces. A Singer job is always a successful job.

"Not only is one assured, when dealing with this firm, of the very best of service, but uniform courtesy, and these little attentions to detail which show that the tradesman is interested in his customer as well as in himself make it a pleasure to do business with this concern any time.

"Persons who have moved into homes which have been vacant for some time, or even if they have been living in a furnace heated house, should have the furnaces inspected.

"If your furnace has not been inspected yet this fall, see Singer & Son and let a representative of this concern look it over. It's very dangerous to build fires in furnaces without a thorough inspection before the first one, and sometimes after several have been made.

"They become clogged with dirt and dust throughout the summer, and, also, there may be a number of bolts and nuts loosened, and some probably fallen off.

"Imagine what might happen if your furnace is in this condition

after a long summer, and you build the first fire without inspecting your furnace.

"The furnace installed by this company is put in according to the Standard Code regulating the installation of warm air furnaces in residences. This code is approved and issued by authority of nationally known associations."

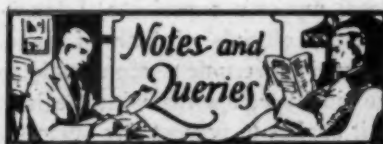
Reliable Sheet Metal Company, San Francisco, California, Expands Into Larger Quarters

The ever increasing demand for sheet metal products and the services of the sheet metal contractor in San Francisco, California, have made it necessary for the Reliable Sheet Metal Company, 496 Sixth street, to lease a large one-story building that is now under construction at Fifth and Bryant streets. This expansion will increase the facilities of the firm by about 75 per cent.

Every Copy of American Artisan Helps Fuel Oil Heating Company, Detroit, Michigan

The Fuel Oil Heating Company is now located at 3853 Michigan Avenue, Detroit, Michigan.

In writing to us to inform us with regard to this change of address, Mr. Guy R. Eide says, "I value your paper very highly and wouldn't want to be without it. Every copy contains ideas and information of great help to us in our business."



Radiator Cabinet with Humidifier Attachment

From E. Gissinger Company, 129 State Street, Wauwatosa, Wisconsin.

Who manufactures sheet metal covers for steam radiators with humidifier attachment?

Ans.—Hart and Cooley Company, 73 East Lake Street, Chicago, Illinois, Tuttle and Bailey Manufacturing Company, 1125 West 37th

Street, Chicago, Illinois and Tayco Register Shield Company, Menasha, Wisconsin.

Small Bevel Gears

From J. L. Williams, Salitpa, Alabama. Please advise me where I can buy small bevel gears.

Ans.—Albaugh-Doyer Manufacturing Company, 2112 Marshall Boulevard, Chicago, Illinois, and Foote Gear Works, 430 North Oakley, Chicago, Illinois.

Saddle Valve for ¾ Inch Pipe

From Farrow and Muza, Oshkosh, Wisconsin.

Please advise me where I can buy saddle valves to clamp on a ¾-inch water pipe. These valves are used in connection with the installation of automatic humidifiers.

Ans.—Carr Supply Company, 414 North Dearborn Street, Chicago, Illinois, Robinson Furnace Company, 205 West Lake Street, Chicago, Illinois, and Marshalltown Manufacturing Company, Marshalltown, Iowa.

"Effco" Ventilators

From James L. Perkins, 140 South Dearborn Street, Chicago, Illinois.

Who makes the "Effco" ball bearing ventilators?

Ans.—W. F. Hirschman Company, Incorporated, Le Roy, New York.

"American" Gasoline Heater

From F. H. Wiard, Avon, New York.

Please advise us who manufactures the "American" Gasoline Heater.

Ans.—American Gas Machine Company, Albert Lea, Minnesota.

"Buckeye" Furnace

From Bernard A. Westphall, Box 323, Sharon, Wisconsin.

Please advise me where I can get repairs for a 26" "Buckeye" furnace.

Ans.—The Challenge Manufacturing Company, Ashtabula,

Repairs for No. 336 Northern Warm Air Furnace

From Joseph Vinatieri and Company, Yankton, South Dakota.

Please advise us where we can secure repairs for No. 336 Northern Warm Air Furnace.

Ans.—Northwestern Stove Repair Company, 654 West Roosevelt Road, Chicago, Illinois.

The Editor's Page

Bringing Sheet Metal Cornices Back into Popularity

THE Sheet Steel Trade Extension Committee, in continuing their progressing and far-reaching program of repopularizing sheet steel products, have taken another step in that direction. They have recently mailed to some 7,500 architects throughout the United States copies of the Standard Specifications for the Fabrication and Setting of Sheet Steel Cornices.

In commenting on this AMERICAN ARTISAN heartily endorses what the committee has pointed out; namely, that if sheet metal contractors will focus their attention upon getting cornice jobs, not from each other, but from masons and carpenters, thereby giving rise to new business rather than cut-throat competition between men in the same industry, and will put all their ingenuity and craftsmanship into making the work excel in every particular, there will be very little doubt that the sheet metal cornice will sweep the field, and that in the course of a very few years nothing but sheet metal will receive consideration for this purpose.

It is with this thought and intention in mind that the specification has been drawn so as to cause the cooperation of the architect toward cornice work of real excellence through the specifications which he writes.

Why Substituting Cheaper Materials Doesn't Pay

INSTANCES are still cropping out in the sheet metal industry where sheet metal contractors fail to follow specifications as given by the architects for certain definite materials.

The sheet metal contractor today who thinks that he can substitute cheaper materials for those that have been specified on certain buildings is certainly riding for a fall. If a contractor wants to lose his reputation in a hurry, the only thing necessary for him to do is to disregard the architect's specifications. One or two instances of this kind and he will be through, at least insofar as the architect giving him any high-class work to do is concerned.

One of the first lessons that a recruit in the army or navy learns is discipline—with an upper case D. Until the recruit realizes the importance of carrying out orders to the letter he has little value as a soldier, for the simple reason that he cannot be depended upon to execute the will of the general who is supervising the operation.

The same applies to the man in business. No architect is going to give a contractor work who has the reputation of disregarding specifications. He cannot afford to. His reputation is at stake.

Therefore, one of the first things that a contractor can well school himself to do is to learn to follow specifications. The attempt to substitute cheaper materials for those specified can only result in one thing—the loss of confidence. Without enjoying the confidence of the architects and the public the sheet metal industry can get nowhere.

Measuring a Man's True Greatness

THE true character and greatness of a man are revealed in his most casual remarks. In the December 11th issue of AMERICAN ARTISAN there appeared an account of the proceedings at the Western Warm Air Furnace & Supply Association meeting held December 4. Included therein was also Secretary John H. Hussie's report, in which he very ably discussed the hopes, fears and needs of the association and the industry which it represents.

At the end of the report, however, Mr. Hussie included, in a few modest words, his resignation from the office of secretary, giving poor health as his reason for wishing to relinquish the office of secretary.

In those few words, to my mind, Mr. Hussie has revealed his real greatness. Any one who knows Mr. Hussie, who knows how close to his heart the work of the Western Association is, also knows the mental anguish and sorrow the offer to resign from the post he has held so long and filled as no other man could possibly have filled it must have cost him.

And yet observe him willing and anxious to sacrifice his own comfort, yes, even himself that the work of the association and that of the industry might go forward unimpeded.

When a man is ready to sacrifice himself for the benefit of those he loves, that indeed is the real test of greatness.

Fortunately for the association and the industry at large, Mr. Hussie was not permitted to resign. He may be flat on his back in bed, but he has the aid of a very able and active assistant in Mrs. Hussie and the duties of secretary will be very efficiently discharged in their hands.

Our Furnace Special Will Be Out Next Week

Our Thirty-Third Warm Air Furnace Annual will be placed in the mails under date of December 25. We know that you are going to like it and enjoy from first to last. Watch for it!

AMERICAN ARTISAN wishes each of its readers and advertisers a very merry Xmas.

Random Notes and Sketches

By Sidney Arnold

"The essence of humor is sensibility; warm, tender fellow-feeling with all forms of existence."—Carlyle.

My friend, Art R. Podolske, 22 Center street, Milwaukee, Wisconsin, finds it impossible to be in two places at one time. Therefore, when association meetings interfere with the deer hunting season, the association meetings must go by the board, even though it is the first local association meeting Art has missed in twenty-three and the first state meeting he has missed in eleven. He is the association secretary, the reason for his good attendance. The call of the north was responsible for Art's backsliding this time, and as he brought back the air-tight alibi shown in the accompanying illustration he will have to be forgiven.

What was all the shooting about? Well, it seems that Jack Millen, also of Milwaukee, entertained a group of bold, bad hunters at his Muskie Lake resort, McNaughton, Wisconsin.

But I am going to leave the remainder of this story to your imaginations. In the picture are shown Mr. and Mrs. Jack Millen, Nick Millen, Art R. Podolske, all of Milwaukee, and George R. Podolske, sheet metal contractor and hardware merchant of Sussex, Wisconsin.

I had the pleasure of a visit on Thursday of this week from Mr. A. F. Frazee, Secretary and Advertising Manager of the Rudy Furnace Company, Dowagiac, Michigan. It was the first time that I had met Mr. Frazee and his visit was an extreme pleasure to me.

I also had a visit on Wednesday of this week from Mr. H. H. Kwatnez, of the Acme Metal Service, 5630 Lake Park Avenue, Chicago. Mr. Kwatnez carries the

slogan, "If it can be done we can do it" on his sign, and I have every reason to believe that he lives up to this slogan in his dealings with the public.

Then along toward the close of the week my old friend, "Professor Dinkelspiel" (Tom Pearson) factory representative of Thomas and Armstrong, came in, and with him was Mr. D. E. Cotton, of the A. H. Robinson Company, Cleveland. Then, too, there was Mr. E. J. Schimke, of the Colburn Heater Company, who came in to say a few words, and Blair Quick telephoned. So, taken on the whole, I have had quite a few callers this week, which gives me a great deal of pleasure, indeed.

"Have you any jumpers?" asked the man, as he wandered to the counter where overalls were displayed.

"All of us are in that class," explained the clerk, confidentially. "The boss keeps us jumping."—Good Hardware.



Group of Bold, Bad Deer Hunters and their catch. Those in the group are Mr. and Mrs. Jack Millen, Nick Millen, Art R. Podolske and George R. Podolske

A Scientific Discourse on the Relation of the Einstein Theory to Warm Air*

Rating Furnaces, the Convolutions of the Fire Travel and Truth About Asbestos Bloomers

By PROF. VON DINKELSPIEL, B. S., F. O. B.

SOME speechmakers get up und talk a lot, but don't say nod-dings. Now my subject dis evening iss "Hot Air"—und I am *full of my subject!* My lecture vill be divided into two parts.

In der first part I vill explanation und explode der "Einstein Theory of Relativity"—und owing to its great profundity, emissivity und general deepness, dere vill be an intermission of ten minutes between der first part und der second part for relaxation und beer, cheese und crackers, or vat have you.

INSTALL BY STANDARD CODE

In der second part I vill explanation to der laymen here assembled der mysteries of rating furnaces, der convolutions of der fire travel, der truth about asbestos bloomers for varm air pipes und der proper vay to proportion B. T. U.'s to B. V. D.'s.

Now der newspapers, magazines und college professors had a lot to say about dis fellow Einstein. Some of dem vanted to kill him und odders vanted to run him for United States Senator or someting. Dey kept talkin' about his theory, but nobody could explanation it—und dere vas nodding about it in der "Standard Code"—so I kept vondering vat it vas all about until one day I happened to go into a Yiddish cafeteria, und after I picked up some "Woolworth silver-vare" und a tray und paper napkin (like a shoplifter), und joined der chain gang, I noticed a long haired foreign looking fellow in front of

me getting his try full, und der cute liddle bob haired voman mit a big spoon says, "Vould you have some gravy on your potatoes, Mr. Einstein?" Gott! I vas so excited I nearly dropped my tray! Could it be dot at last I vas face to face mit der great Einstein?

I shouted to der vimmens mit aprons to load up his tray mit baked ham, pig knuckles, sphare ribs und odder Yiddish delicacies und to gif me der check. Den I invited him to sit at my table.

Ve talked for an hour und a half und I kept trying to find out vat hiss theory vas—and I vas prepared to make copious notes und deductions. Vell he viggaged a good deal ven he talked, but after boiling down, straining und dissecting all of his verbosity, loquacity und general conversation I found dot his theory vas simply diss—dot Mr. Einstein should be able to buy all of hiss goods for 10 per cent less dan Mr. Goldberg or any other Scotchman! Und dot relatives should have der own money!

So, you see, it iss so simple dot it iss almost foolish—and I hope dot der newspapers quit vasting time talking about it und say something about *prohibition* vonce in a while!

Intermission

Now dot you are relaxed und have crossed und uncrossed your legs, ve vill proceed to penetrate der mysteries of how der manufacturers rate der furnaces und broadcast catalogs mit fancy covers und figures like "Ziegfeld's Follies." First dey lock up all of der employes in der back shop und der sales manager, president, chairman of der board und der referee in bankruptcy (iff dey haff one on der payroll), all retire to a dark room

mit der superintendent und an elastic tape line made of rubber steel.

Der furnace stands in der middle off der room mit its mouth wide open, vondering vat it's all about. Der officers join hands und stand in a circle around der base ring, den der superintendent switches off der lights und stretches der tape line around der whole crowd (und maybe der president puts some kinks in der line). Dot giffs dem der "measurement over all."

INSTALL BY STANDARD CODE

Den der superintendent switches der lights back on und announces der measurements like it vas Al Smith's majority in New York! Dot iss done to fool der innocent und unsuspecting sales manager so dot he vill be "F. O. B." (full of bull) und enthusyism ven he gets up der catalog. Dis iss done in der best corporations und iss approved by der Censorship Board off "Der Amalgamated Society off Liars." Dis overall measurement iss der basis for all other figures und iss considered almost as good as a quarterly dividend on der common stock. Dey multiply dot measurement by der president's age (at his next birthday) und den by der score off der Army und Navy football game und divide der total by 7-11.

Den dey begin to figure out der fire travel. Some manufacturers talk about der fire travel like it vas a round trip to Europe—mit a lot off detours. Den der fire travel iss added to der prime, radiant und reflective heating surfaces. Some manufacturers charge der ash pit to "profit und loss," but some include not only der ash pit but der ash can und der smoke pipe.

All off dese figures give a grand total vitch iss added to der stenographer's income tax, und den der sales manager iss ready to have der printer rate der furnaces! "Figures don't lie," but some terrible liars figure, und a good sales manager looks at a big pile off catalogs—

*Address by Thomas W. Pearson delivered at the banquet of the National Warm Air Heating and Ventilating Association held at Urbana, Illinois, December 1, 1926.

und den "goes 'em one better."

After dott it iss up to der dealer to prove it. He should read der "Standard Code" until he can repeat it backwards mit hiss eyes shut. Den he should pick out a furnace mit a fancy front mit plenty of gold letters on it und figure as follows: Figure der glass same as iff it vas clean und divide by H_2O ; den ask der woman off der house for a copy of her last statement to der assessor und dot vill give you der cubical contents; den divide dis by der serial number off der piano, Victrola or radio und dot vill giff you der cross section area off her basement dot cannot be used for storing home brew.

Now you are ready to figure out pipe sizes, stacks, boots und registers. Take der co-efficient off der R. P. M. (rains per month) und divide it by C. O. D. (cash on deposit) und multiply by C. F. M. (cash found missing) und den subtract your overhead und add your liability insurance. Dis vill giff you der ratio off B. T. U.'s to your B. V. D.'s. Of course, iff you are short on B. T. U.'s you vill haff to add to your B. V. D.'s. Dot has been found good practice in all climates. Der leader pipes should have sufficient elevation so dot visiting company vill not haff to duck der heads ven valking in der cellar. Now you are ready to call up your prospect und give him der price.

If he talks nice und says "O. K.," maybe you get to go mit a furnace salesman to a five dollar dinner und "Der Big Parade" und you "look at der vorld through rose-colored glasses"; den, again, maybe he gives you der H. H. und you are S. O. L. und glad to sleep at der Salvation Army bunk house und eat H. D.'s (hot dogs). But don't be discouraged iff you miss some of dese contract jobs dot everybody figures on. Go after replacements und rejuvenation jobs. You can take a sick furnace dot hass lost its school-girl complexion und hass circulation anemia und hook it up mit one off Jim Miles' peppy pulmotor fans und it vill "step up"

like a war veteran full of "monkey glands" und fill der house full of warmth und cheer und your pockets full of cash. Mr. Miles is now figuring on heating der University Stadium for der comfort of high priced football spectators.

In closing I vish to pay tribute to der vonderful progress dot hass been achieved in der heating industry und to give proper credit to der University for its most effective cooperation.

Several years ago der Research Laboratory issued its startling bulletin No. 4-11-44 on "Emissivity," showing dot warm air pipes were contaminated when encased in asbestos bloomers, und submitted charts (dot looked like der Western Union wires sagging down after a bad sleet storm) to prove it. In other words, you get more heat ven you leave off der coverings. Der manufacturers off asbestos paper applied to President Coolidge for an injunction against der University, but he vas busy shaving—income tax rates—so dey got der Senator from New Jersey to introduce a "National Referendum" so ve can all vote next year on der question: "Shall ve do mitout beer light vines und asbestos paper!" Vell, der co-eds of der University und vimmens all over der United States und Milwaukee must have read dot bulletin, also, because dey have been leaving off coverings ever since!

In furnace terminology dey began by leaving off der "bonnet" (und most off der hair); den dey left off der upper front; den der inside casing und der long-handled "insulation"; den dey left off der "cold air boots" und began wearing slippers und sandals und pink stuff dot keeps der silk worms vorking overtime und Sundays; und den, by golly, dey left off der lower front—and American scenery und der men folks' eyesight vas improved about 87 per cent!! Oculists, opticians und optometrists now pay big income taxes—for every fellow now vants good long distance glasses. All of dis big improvement in scenery, eyesight,

voman's physical freedom und development—reaching its apex in der channel schimmers—hass been brought about through dis beautiful und intelligent cooperation, und before leaving you to return to der Vaterland I propose three rousing cheers for Prof. Villard!

Hoch! Hoch!! Hoch!!!

H. A. Beaman Goes With The Globe Stove & Range Co., Kokomo, Indiana

Mr. H. A. Beaman, President of the Indiana Warm Air Heating and Ventilating Association, has severed his connection with the Hall-Neal Furnace Company and has taken a position with the Globe Stove & Range Company, Kokomo, Indiana.

Robber on Pipeless Breathes Cold Air Into Warm Air Hood. Why?

H. H. Kwatnez of the Acme Metal Service, 5630 Lake Park Avenue, Chicago, is confronted with a peculiar warm air heating problem.

He has a pipeless warm air furnace installed in the basement of a store. The furnace has a 26-inch fire pot and is one size larger than that required according to the code.

There are two cold air returns which are taken from opposite sides of the first floor and which enter the casing on opposite sides. The total area of these two cold air returns is 10 per cent greater than the area of the single warm air duct to the first floor.

A robber is taken from one side of the hood. This robber is a 12-inch pipe and thirty feet long.

The purpose of the robber is to heat a small room on the first floor sufficient to keep water pumps installed in that room from freezing. This duct does not function; in fact it breathes cold air into the warm air duct, in spite of a shield inserted in the hood to deflect the warm air into this pipe.

Why won't this robber work?

Describing Heating Drum Invented by Charles Horn, Butte, Montana

Device Designed to Operate With Cooking Stove—Equipped With Humidifier

THE following is a description of the heating drum upon which Mr. Charles Horn, Butte, Montana, has obtained a patent:

"This invention relates to certain

improvements in heating drums.

"The invention is more particularly directed to the provision of an air heating drum adapted for connection to and operation with a

cooking or kitchen stove or range, for supplying heated air to a building; and one of the objects of the invention is to provide a design and arrangement of heating drum in which fresh air is circulated in such a manner as to be quickly heated by the hot gases and products of combustion from the stove or range, and then discharged as heated air from the drum for distribution to the building to heat the same.

"Another object of the invention resides in the provision in such a heating drum, for humidifying the heated air discharged from the drum into a building, so as to maintain the air in the building in a sanitary, healthy condition.

"A further object of the invention is to provide an air heating drum of the type referred to with means for forcing the entry of fresh air therein and circulation of the fresh air therethrough for heating, so as to maintain a positive supply and flow of air into, through and from the drum.

"A still further object of the invention is to provide an air heating and humidifying drum which is designed and constructed so as to be capable of operation as an air cooling and humidifying medium when the stove with which connected is not operated, and which is capable of such use without structural change or design reorganization.

"Another object of the invention is to provide a construction of air heating or cooling drum in which positive and rapid circulation of air is secured in such a manner as to be subjected to the maximum effect of the heating or cooling medium.

"Referring to the accompanying drawings in which similar reference characters refer to corresponding parts throughout the several figures:

"Fig. 1 is an elevation of a heating drum of the invention connected with a cooking stove, a portion only of the stove being shown.

"Fig. 2 is a vertical section through the heating drum of Fig. 1 showing the arrangement of intake

Nov. 9, 1926.

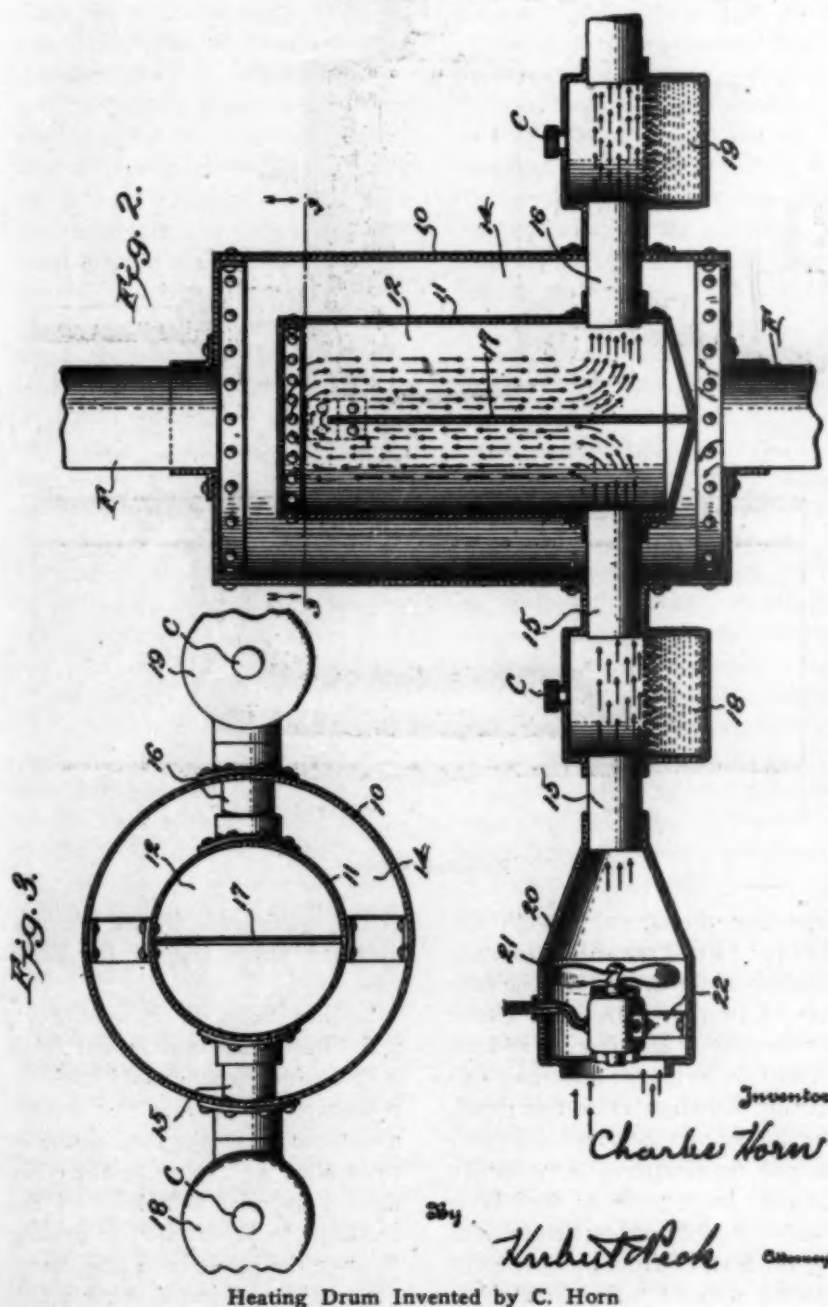
1,606,578

C. HORN

HEATING DRUM

Filed Oct. 12, 1925

2 Sheets—Sheet 2



Heating Drum Invented by C. Horn

and discharge conduits with the air forcing and humidifying elements in operative connection therewith:

"Fig. 3 is a horizontal transverse section through the heating drum of Fig. 1, taken on line 3—3 of Fig. 2 above the air intake and discharge conduits therefor.

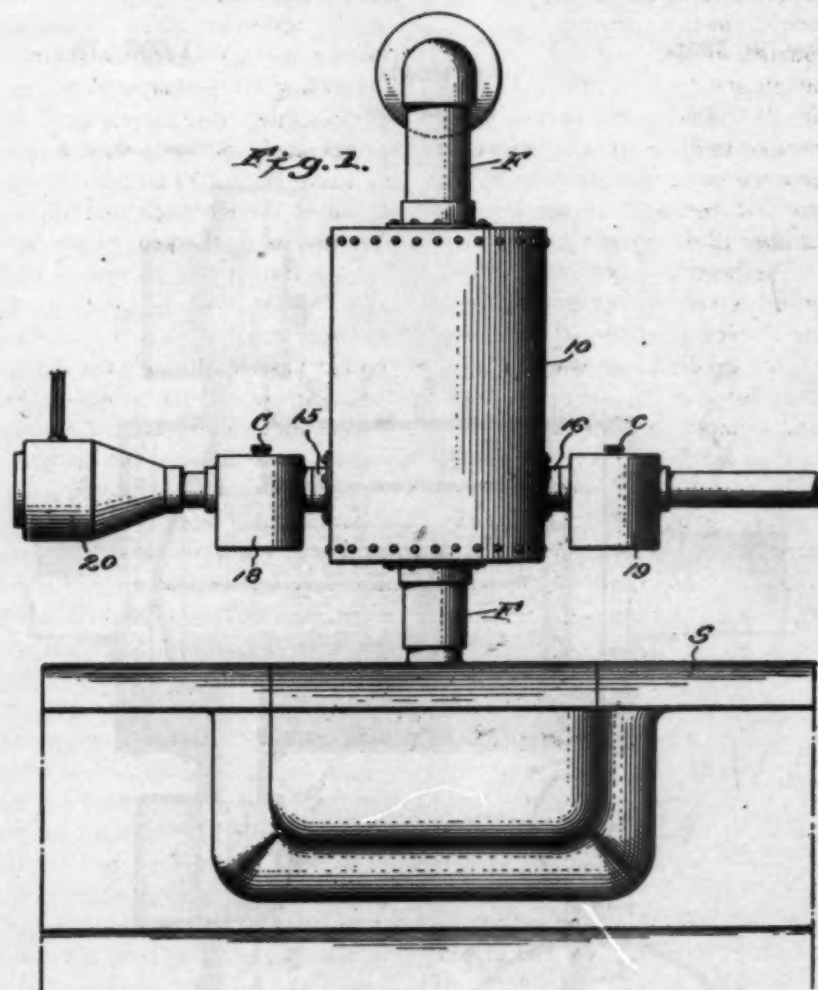
"In the embodiment and arrangement of the invention disclosed herewith, purely by way of example and not of limitation, the heating drum is designed and adapted for connection with a stove or range of the cooking or kitchen type, although it is to be understood that the invention is equally adapted for use with any desired source of heat. In Fig. 1 of the accompanying drawings, a portion only of a stove S of the cooking or kitchen type is more or less diagrammatically illustrated, and includes the usual or any desired flue or smoke pipe F from the stove to a chimney or other discharge point for carrying off the gases and products of combustion from the stove and for creating and maintaining a draft through the combustion chamber thereof, as will be readily understood.

"According to the illustrated example of one possible form of which the invention is capable, the heating drum 10 in mounted and connected in the flue or smoke pipe F at a point therein between the stove S and the connection of pipe F with the chimney or other discharge flue. Referring now to Fig. 2 of the drawings, the drum 10 is of cylindrical form, although not so limited, and is interposed in the pipe F as a part or continuation thereof, with the pipe F discharging from stove S through and into the lower end thereof, and the drum 10 discharging from and through its upper end into the upper or outer section of pipe F, so that the drum 10 forms an enlarged diameter section of pipe F and the hot gases and products of combustion pass therethrough from the stove.

"Within and concentric with the drum 10, a closed cylinder 11 is mounted and forms an air heating chamber 12. The cylinder 11 is

preferably, although not necessarily, constructed of copper, and in mounted position is spaced from the drum 10 on all sides so as to form the chamber or passage 14 around and completely surrounding the cylinder. At opposite sides of the cylinder 11 at the lower end thereof pipes or conduits 15 and 16 are connected in communication with the air heating chamber 12 thereof, and

and terminating a distance inwardly from the upper or outer end thereof, and extending completely across the cylinder. This baffle plate 17 is mounted extending across the cylinder between the intake and discharge conduits 15 and 16, and divides the chamber 12 into two compartments with which the conduits respectively communicate, and which compartments are connected



Exterior View

extending therefrom through the chamber 14 and outwardly through the sides of the drum 10. The conduit 15 forms the fresh air intake for the heating chamber 12, and the conduit 16 forms the heated air off-take or discharge from this chamber 12, as will be more fully explained hereinafter. A vertically disposed baffle plate or wall 17 is fixed in and extending centrally of the cylinder 11 from the lower end thereof upwardly therethrough to

at the upper ends by the passage over the upper end of the baffle plate.

"Water tanks or reservoirs 18 and 19 are connected in and form a part of the conduits 15 and 16, respectively, and extend or depend a distance below the conduits so as to be filled with water or any other desired material to a level of the conduits, to permit the air passing through the conduits to pass thereover and be subjected to the action

thereof. The tanks 18 and 19 are provided with the usual or any desired filling openings closed by the removal caps or plugs C, as will be clear by reference to Fig. 2 of the accompanying drawings.

"The fresh air intake conduit 15 is provided at its intake end with an enlarged funnel shaped casing or housing 20 forming the intake mouth therefor, and a suitable blower or fan 21, preferably of the electric motor driven type, is mounted in the casing 20 by any suitable standards or frame 22 (see Fig. 2). The blower or fan 21 is operated to draw fresh air into and force the same through conduit 15, into and through the air heating chamber 12 of cylinder 11.

"The heating drum as above described is suitably connected in the flue or pipe F of the stove S, and the hot air discharge conduit 16 is connected with any desired arrangement of pipes (not shown) for conducting the hot air to the desired points of a building which it is desired to heat, as will be readily understood. In operation with a fire in the stove S, the hot gases and products of combustion pass from the stove S through pipe F and over and around the cylinder 11 in drum 10 through the chamber 14 therein and thoroughly heat the air in the heating chamber 12, the gases and products of combustion passing from drum 10 by flue F. The formation of the cylinder 11 of copper which is a good conductor of heat, assists in the rapid heating of the air in chamber 12. The blower or fan 21 is operated and draws or forces fresh, cool air through conduit 15 into the cylinder 11, where it passes upwardly over the baffle plate 17 and downwardly through the chamber 12, then outwardly through discharge conduit 16 for distribution. By the provision of the baffle plate 17 the air is caused to follow a tortuous passage through the cylinder 11 and is thus held therein a sufficient time to permit of its being thoroughly heated before discharge. The fan 21 maintains and forces circulation of air through the cylinder 11 and insures

the rapid movement thereof, as well as sufficient quantities to result in the desired supply of hot air for heating purposes. The water in the reservoirs 18 and 19 over which the cool air passes in entering and the heated air passes in discharging from the drum, maintains the air in a moist, fresh condition so that the portions of the building heated thereby will be maintained in a healthy condition.

"The invention further contemplates a use and operation thereof for cooling a building. When so operated, the stove or range S is not operated, and ice is packed into the tanks 18 and 19 so that the air is forced therethrough and thereover and is discharged by conduit 16 in a cool state. Obviously, ice or any other cooling medium can be placed at other locations to cool the air passing through the drum, for example, in the chamber 14 around the cylinder 11, and the invention contemplates and includes such location and operation.

"With the heating drum of the invention, a kitchen range or cooking stove can be utilized to heat a house in an efficient manner, while operating for cooking purposes, and thus utilize what would be wasted heat. The heating drum can be used with any other desired source of heat for securing an efficient heating of air for any desired purpose, as will be recognized.

"It is also evident that various modifications, variations, substitutions and changes might be resorted to without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact and specific disclosures hereof.

"Desiring to protect my invention in the broadest manner legally possible, what I claim is:

"An air heating drum formed with an inlet and a discharge for passing a heating medium there-through, a closed cylinder mounted within said drum and spaced therefrom for passage of the heating medium thereover and therearound, an air inlet conduit extending through the drum and discharg-

ing into one end of the cylinder, an air discharge conduit leading from said drum opposite the inlet conduit, a baffle plate in the cylinder between and forming a tortuous air passage from the air inlet to the air discharge, and water reservoirs mounted in and connected with said inlet and discharge conduits for humidifying the air passing there-through.

"Signed at Butte, Montana, this 3 day of October, 1925.

CHAS. HORN."

J. F. Quereau Added to Warm Air Research Staff, University of Illinois

Most warm air furnace manufacturers and installers who are at all interested in the research work that is being carried on at the University of Illinois are pretty well acquainted with Professors Willard, Kratz and Day.



J. F. Quereau

At the recent meeting of the National Warm Air Heating and Ventilating Association at Urbana, Professor Willard introduced a new member of the research staff working on the warm air research, Mr. J. F. Quereau.

Mr. Quereau is a graduate research assistant in mechanical engineering at the University of Illinois. One-half of his time is devoted to research work and one-half to graduate study in mechanical engineering.

He entered the University of Illi-

nois in September of this year and was placed on the warm air heating research work immediately thereafter. Most of his work is done under the direction of Professor Day at the research residence, although he does spend some time in the university laboratory.

Mr. Quereau is a graduate of the

University of Texas, completing his undergraduate work in mechanical engineering at that university last spring. He is greatly interested in the warm air research project and will certainly give the university and the warm air heating industry the full benefit of his ability in the research work.

Room for Hardware Retailers in This Electrical Marketing Program

National Development Plan Gives Hardware Stores Chance to Participate

MORE than one-fourth of the electric appliance business of this country is done by department stores, hardware stores and specialty shops other than electrical stores. For this reason these concerns have a direct interest in the new National Market Development Plan which the electrical industry is adopting and hopes to put into operation beginning January 1. It will soon be possible for stores to have a part in the plan and participate in its benefits. An organization continental in scope is now setting itself up to conduct the enterprise.

The object of the big plan is to increase public interest in electricity and electrical goods to such a point that, not only will a greater degree of comfort and convenience be injected into the life of the nation, but the business of distributing electrical appliances will be greatly stimulated. The plan calls for public education by national and local newspaper and magazine advertising, by exhibitions, dealer helps and the like.

The plan has both national and local phases. The national work will be done by The Society for Electrical Development, Inc., a 15-year old, non-profit, coöperative organization with headquarters at 522 Fifth avenue, New York City, and the local direction will rest in electric leagues which become chapters of the Society. An ingenious plan of mutually sharing national and local membership income is intended

to strengthen the tie-up between the Society and the leagues and make the work of both more effective.

Not only will there be activities to develop electrical business in general, but in addition special product units will be set up to advance the interest of those products. Already there is a campaign operating nationally for electric refrigerators, one for electric street trucks, another for industrial tractors and a fourth to promote the Red Seal Plan of better house wiring. A fifth on electric signs is organizing and others are in prospect on such products as washers, ranges, cleaners, fans, lighting fixtures, portable lamps and other electric appliances.

Local chapters of the Society can select any of the product campaigns that are running nationally and get full benefit from them by operating parallel local units. A store in a chapter city can take a hand in any product campaign without devoting its time or money to the balance of the electric league's work. This gives retail businesses the first opportunity of the sort to link up with an electrical industrial movement.

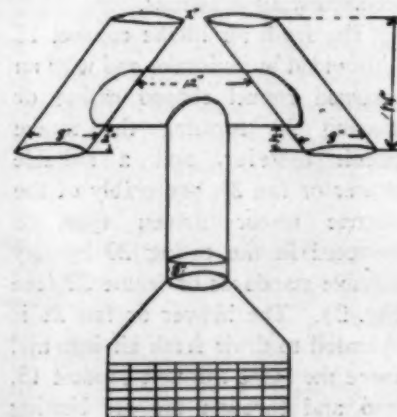
There are now 140 electric leagues in principal American and Canadian cities and more are to be organized.

J. A. Conrad Offers Solution to Julius Hauser's Chimney Problem

TO AMERICAN ARTISAN:
I am mailing you a drawing of a chimney top that you may send to

Mr. Julius Hauser & Son, Evansville, Indiana, who asked for a suggestion on a chimney top.

This is the best type of chimney top I know of where the surround-



The Chimney

ing buildings are higher than the one on which the chimney is to be located.

I wish very much to help Mr. Hauser & Son out on this problem and hope this type of chimney top will do the work required in their case.

J. A. CONRAD.

16 Third Street, Beloit, Wis.

Retail Hardware Doings

Indiana

Mr. and Mrs. C. K. Lewis has bought the Jay Younkin Hardware Store on East Main Street, Russia-ville.

Iowa

Mr. Ochs of Deep River has purchased the W. M. Rider Hardware Company of Garwin.

Minnesota

The Schwickert Hardware Store, Mankato, has opened for business.

Missouri

J. K. Hill has sold his hardware store to G. G. Mitchell, Nevada. Mr. Mitchell has taken immediate possession.

Montana

Ray P. Porter, Great Falls, has opened a hardware store at 318-320 Antial Avenue.

South Dakota

I. J. Miller Hardware Company, De Smet, was damaged by fire.

Wisconsin

The Green Bay Hardware Company has opened a new store at 218 North Washington Street.

The Lincoln Hardware Company, Racine, have moved into their new building at 1817-19 State Street.



A combination of many small improvements results in a great elbow—the one with the Lupton trademark . . . Consider for instance, the Lupton graduated taper—a taper which extends 2½" up from the end. This feature permits a quick, easy joint that is positive and water-tight without solder. It permits faster and better work, especially in cramped corners. It saves hammer blows, soldering and extra work on every job . . . Use Lupton Elbows on your next roof job. You'll find them more profitable . . . *Specify them to your Jobber . . .*

**DAVID LUPTON'S SONS COMPANY, ALLEGHENY AVENUE
AND TULIP STREET, PHILADELPHIA, PENNSYLVANIA**

Say you saw it in AMERICAN ARTISAN—Thank you!

Steel Market Fairly Steady—Orders and Specifications Slightly Better Than at Opening of December

*Nonferrous Metal Market Firm—
Pig Iron Market Shows No Change*

THE steel industry appears to be running on a fairly even keel, according to the midweek reviews.

"Production of iron and steel suffered no appreciable loss in the last week and at 70 to 75 per cent for the industry as a whole is believed to be scraping bottom," the Iron Trade says.

"Car awards approximated 3,000 last week, or almost as many as in all of November. Structural steel lettings totaled 78,401 tons, the largest week's activity in two years."

"Apart from railroad buying, new business still lags," the Iron Age says. "But orders and specifications are slightly better with most of the steel companies than at the opening of December."

"If, as is to be expected, output falls off further during the holidays, there will be compensation in an increased rate early in the new year."

Zinc

The zinc market is firm, showing more tendency to advance than to subside again to 7.00 cents, that price being freely bid for first quarter shipment and declined.

January at 7.05 cents is being more freely taken and not so freely offered, nor is there any pressure to sell beyond that month at the present price.

While it cannot be termed an active market except in contrast to that of a couple of weeks ago there is apparent a gradual increase in interest, not surprising in view of the small amount of futures yet bought.

Tin

The offerings of tin have been on a somewhat limited scale during the past few days and it is this rather than any increase in the demand that has brought about the firmer market.

It is true that there has been some increase in the demand Tuesday but it still did not compare with what it was last Thursday when dealers and importers were such heavy sellers of all of the future positions.

Prices today are $\frac{1}{8}$ cent to $\frac{3}{4}$ cent higher on prompts, $\frac{3}{8}$ cent to $\frac{3}{4}$ cent higher on futures.

Dealers were the principal buyers although there were some orders placed by consumers both for prompts and future.

Lead

More interest is being shown by consumers in January shipment lead but the relaxing in conservatism is slight, and all told there is only moderate activity, most of the demand being for early shipment.

Consumption is continuing on a large scale and the prospects for it so far as can be judged are favorable.

Production is apparently adequate and although there is no great surplus, neither is there any shortage for prompt shipment.

Copper

November copper statistics were not such as to stimulate renewed buying by consumers. However, producers are not generally seeking business at concessions after the recent substantial orders booked.

At the same time custom smelters, who are not inclined to accumulate stocks, are readier sellers.

Some producers are ready sellers at 13.62½ cents delivered for shipment over the first quarter of 1927.

Pig Iron

Holiday character of trade in pig iron continues. Current orders are still small in number and in tonnage. At the same time shipments against contracts are steady and satisfactory. Few if any requests for

delays in shipments are being received by the furnaces.

On the other hand anticipations of shipments are still called for. Consumers, apparently have been too conservative, in some instances at least, in keeping light stocks during the inventory period and find it necessary now and again to urge forward shipments.

At the same time there is no disposition to anticipate first quarter needs any further than has already been done.

Under such conditions no important concessions in prices of iron are to be anticipated in the near future but the market is not being seriously tested because inquiries are too small to excite keen competition.

So far this week bookings by furnaces have not increased to any important extent as compared with previous weeks in the last month.

Several orders, however, have been taken by both Buffalo and eastern Pennsylvania furnaces.

Solder

Chicago warehouse prices on solder are as follows: Warranted 50-50, \$43.25; commercial 45-55, \$40.25, and plumbers', \$37.25, all per 100 pounds.

Old Metals

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, \$16.50 to \$17.00; old iron axles, \$20.50 to \$21.00; steel springs, \$16.00 to \$16.50; No. 1 wrought iron, \$12.00 to \$12.50; No. 1 cast, \$15.75 to \$16.25, all per net tons. Prices for non-ferrous metals are quoted as follows, per pound: Light copper, 9 cents; zinc, 4½ cents, and cast aluminum, 16 cents.

As an Added Insurance of Long Life and Economy

Hand-Dipping Conductor Pipe in Pure Molten Zinc AFTER FORMING

OHIO METAL (Open Hearth Copper Alloy), the base metal of Wheeling Conductor Pipe, itself, is highly resistant to age, weather, rust and corrosion. Before forming it is coated with a combination of lead and tin. After forming it is hand dipped in pure molten zinc.

The special hand-dipping process has won for this product the respect of the men on the job as well as the endorsement of architect and contractor. By this method an unbroken coating three times as thick as any heretofore obtained by other processes, is secured. Surfaces, edges and seams are given extra protection to insure uniform long life for every inch of the conductor.

Examine a sample of this improved product which we will send you on request. A close-up inspection will convince you that the name Wheeling is your guide to genuine Conductor Pipe economy and satisfaction.

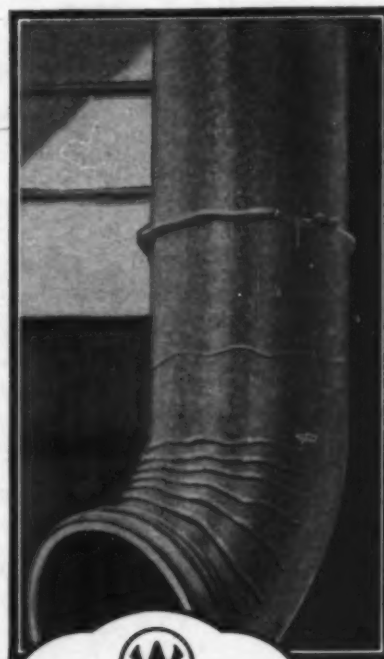
WHEELING CORRUGATING COMPANY
Wheeling, W. Va.

New York
St. Louis

Philadelphia
Richmond

Chicago
Chattanooga

Kansas City
Minneapolis



Wheeling

Zinc Coated

HAND DIPPED CONDUCTOR

Chicago Warehouse Metal and Furnace Supply Prices

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS

PIG IRON

Chicago Fdy., No. 2.....	\$21 00
Southern Fdy., No. 2.....	26 01
Lake Superior Charcoal.....	27 04
Malleable	21 90

FIRST QUALITY BRIGHT TIN PLATES

IC 20x28 112 sheets.....	\$35 10
IX 20x28.....	29 60
IXX 20x28 56 sheets.....	16 20
IXXX 20x28.....	17 65
IXXXX 20x28.....	18 95

TERNE PLATES

IC 20x28, 40-lb. 112 sheets	\$27 90
IX 20x28, 40-lb. 112 sheets	30 90
IC 20x28, 25-lb. 112 sheets	22 20
IX 20x28, 25-lb. 112 sheets	25 20
IC 20x28, 20-lb. 112 sheets	20 25
IX 20x28, 20-lb. 112 sheets	23 00
IC 20x28, 15-lb. 112 sheets	16 55

"ARMCO" INGOT IRON PLATES

No. 8 ga. up to and including 1/4 in.—100 lbs.\$4 55

COKE PLATES

Cokes, 80 lbs., base, 20x28	\$12 60
Cokes, 90 lbs., base, 20x28	13 50
Cokes, 100 lbs., base, 20x28	14 00
Cokes, 107 lbs., base, 1c	14 20
Cokes, 125 lbs., base, IX	16 40
Cokes, 155 lbs., base, 56 sheets	9 20
Cokes, 175 lbs., base, 56 sheets	10 05
Cokes, 185 lbs., base, 56 sheets	10 90

BLUE ANNEALED SHEETS

Base 10 ga.per 100 lbs. \$2 80
"Armco" 10 ga.per 100 lbs. 4 00

ONE PASS COLD ROLLED BLACK

No. 18-20.....	per 100 lbs. \$3 75
No. 22.....	per 100 lbs. 3 90
No. 24.....	per 100 lbs. 3 95
No. 26.....	per 100 lbs. 4 05
No. 27.....	per 100 lbs. 4 10
No. 28.....	per 100 lbs. 4 20
No. 29.....	per 100 lbs. 4 35
No. 30.....	per 100 lbs. 4 45

"ARMCO" GALVANIZED

"Armco" 34.....per 100 lbs. \$6 25

GALVANIZED

No. 16.....	per 100 lbs. \$4 20
No. 18.....	per 100 lbs. 4 45
No. 20.....	per 100 lbs. 4 60
No. 22.....	per 100 lbs. 4 65
No. 24.....	per 100 lbs. 4 80
No. 26.....	per 100 lbs. 5 05
No. 27.....	per 100 lbs. 5 15
No. 28.....	per 100 lbs. 5 30
No. 30.....	per 100 lbs. 5 70

BAR SOLDER

Warranted 50-50.....	per 100 lbs. 43 25
Commercial 45-55.....	per 100 lbs. 40 25
Plumbers.....	per 100 lbs. 37 25

ZINC

In Slabs\$8 50

SHEET ZINC

Cash Lots (600 lbs.).....	\$13 50
Sheet Lots.....	14 50

BRASS

Sheets, Chicago base.....	18 1/2c
Mill base.....	18 1/2c
Tubing, brazed base.....	25 1/2c
Wire, base.....	19 1/2c
Rods, base.....	16 1/2c

COPPER

Sheets, Chicago base.....	22 1/2c
Mill base.....	21 1/2c
Tubing, seamless base.....	25 1/2c
Wire, No. 9 B & S Ga.....	18 1/2c
Wire, No. 10 B & S Ga.....	19c
Wire, No. 11 B & S Ga.....	19 1/2c
Wire, No. 8 B & S Ga. and heavier.....	18 1/2c

HARDWARE, SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES.

LEAD

American Pig	\$3 70
Bar	9 70

Sheet

Full Colls.....	per 100 lbs. 14 00
Cut Colls.....	per 100 lbs. 14 25

TIN

Pig tin	per 100 lbs. 77 50
Bar tin	per 100 lbs. 78 50

ASBESTOS

Paper up to 1/16.....	6c per lb.
Roll board.....	5 1/2c per lb.
Mill board 3/32 to 1/2.....	6c per lb.
Corrugated Paper (26 sq. ft. to roll).....	\$6.00 per roll

BRUSHES

Hot Air Pipe Cleaning

Bristle, with handle, each.....\$0 85

Flue Cleaning

Steel only, each.....1 25

BURRS

Coppers Burrs only40-2 1/2%

CEMENT, FURNACE

American Seal, 5-lb. cans, net	\$ 40
American Seal, 10-lb. cans, net	80
American Seal, 25-lb. cans, net	2 00
Pecora.....	per 100 lbs. 7 51

CHIMNEY TOPS

Iwan's Complete Rev. & Vent.....	30%
Iwan's Iron Mountain only.....	35%
Standard.....	30 to 40%

CLINKER TONGS

Front Rank, each.....	\$0 75
Per doz.....	8 40

CLIPS

Damper	
Acme, with all tail pieces, per doz.....	\$1 25
Non-Rivet tail pieces, per doz.....	25

COPPERS—Soldering

Pointed Roofing

3 lb. and heavier.....	per lb. 40c
2 1/2 lb.....	per lb. 45c
2 lb.....	per lb. 48c
1 1/2 lb.....	per lb. 55c
1 lb.....	per lb. 60c

CORNICE BRACKES

Chicago Steel Bending	
Nos. 1 to 6B.....	Net

CUT-OFFS

Kuehn's Korrekt Kutoffs:	
Galv., plain, round or cor. rd. standard gauge.....	40%
26 gauge.....	36%

DAMPERS

"Yankee" Hot Air	
7 inch, each 20c, doz.....	\$1 75
8 inch, each 25c, doz.....	2 40
9 inch, each 30c, doz.....	2 75
10 inch, each 32c, doz.....	3 00

Smoke Pipe

7 inch, each.....	\$0 35
8 inch, each.....	50
9 inch, each.....	60
10 inch, each.....	90

Reversible Check

8 inch, each.....	\$1 50
9 inch, each.....	1 70

DIGGERS

Post Hole

Iwan's Split Handle (Eureka)	
4-ft. Handle.....	per doz. \$14 00
7-ft. Handle.....	per doz. 36 00
Iwan's Hercules pattern, per doz.....	14 90

EAVES TROUGH

Galv. Crimpedge, crated.75 & 5%

ELBOWS

Conductor Pipe Milcor

Galv., plain or corrugated, round flat Crimp.	
28 Gauge.....	60%
26 Gauge.....	45%
24 Gauge.....	15%

Square Corrugated

No. 28 Gauge.....	50%
26 Gauge.....	35%

Portico Elbows

Standard Gauge Conductor Pipe, plain or corrugated.	
Not nested.....	70 & 5%
Nested solid.....	70 & 5%

ELBOWS—Stove Pipe

1-piece Corrugated, Uniform Blue "Milcor" No. 28 gauge.	
5-inch.....	Dos. \$1 15
6-inch.....	1 25
7-inch.....	1 75

Special Corrugated

6-inch.....	\$1 00
7-inch.....	1 00

Adjustable—Uniform Blue

"Milcor" No. 28 Gauge, Uniform Blue.	
5-inch.....	\$1 65
6-inch.....	1 75
7-inch.....	2 40

WOOD FACES—50% off list.

FENCE

726-6-12 1/2% (100 rods).....	\$28 63
1948-6-14 1/2% (100 rods).....	43 63

FILES AND RASPS

Heller's (American).....	50-10%
American.....	60-10%
Arcade.....	50%
Black Diamond.....	40-10-50%
Eagle.....	50%
Great Western.....	50%
Kearney & Foot.....	50%
McClellan.....	50%
Nicholson.....	50%
Simonds.....	60%

FIRE POTS

Otto Bernz Co.

East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas.....65%
West of above boundary.....61%

Clayton & Lambert's

East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas.....62%
West of above boundary.....48%

Geo. W. Diener Mfg. Co. En.

No. 02 Gasoline Torch, 1 qt.....	\$ 5 55
No. 0250, Kerosene, or Gasoline Torch, 1 qt.....	7 50
No. 10 Tinner's Furn.	
Square tank, 1 gal.....	12 60
No. 15 Tinner's Furn.	
Round tank, 1 gal.....	12 00
No. 21 Gas Soldering Furnace.....	3 60
No. 110 Automatic Gas Soldering Furnace.....	10 50

Double Blast Mfg. Co.

Gasoline, Nos. 25 and 36. 60%

Quick Meal Stove Co.

Vesuvius, P. O. B. St. Louis 30% (Extra Disc't. for large quantities)

Chas. A. Hones, Inc.

Buzzer No. 1.....	\$ 9 00
Buzzer No. 2.....	12 00
Buzzer No. 22.....	13 50
Buzzer No. 42.....	15 00
Buzzer No. 43.....	19 00

GALVANIZED WARE

Pails (Galv. after made), 16-qt.....	\$2 12
Tubs (Galv. after made), No. 1.....	6 00
No. 2.....	6 85

GLASS

Single Strength, A, 25-in. brackets.....	85%
Single Strength, A, 34 to 40-in. bracket.....	82%
Single Strength A, all other brackets.....	81%
Double Strength A, all sizes.....	82%

HANGERS

Conductor Pipe	
Milcor Perfection Wire.....	25%
Eaves Trough	
Milcor Eclipse Wire.....	15%
Milcor Tipex Wire.....	10%
Milcor Milwaukee Extension	
Milcor Steel (galv. after forming) List plus.....	12 1/2%
Milcor Selflock E. T. Wire, List plus.....	50%

HOOKS

Box	
V. & B. No. 1, each.....	\$0 26
Conductor	
Milcor	
"Direct Drive" Wrought Iron for wood or brick.....	15%
Hay	
V. & B. No. 1, each.....	\$0 26

HUMIDIFIERS

"Front-Range" Automatic	
In single lots.....	50%
In lots of 10 or more.....	50-5%
In lots of 25 or more.....	50-10%
Vapor pans, etc., each.....	50%

LIFTERS

Stove Cover	
Coppered.....	per gro. \$6 00
Alaska.....	per gro. 4 75

MALLETS

Tinner's	
Hickory.....	per doz. \$2 25

MITRES

Galvanized steel mitres, and caps, end pieces, outlets.....30%

Milcor

Galv. one piece stamped..40%

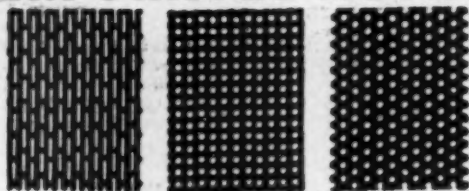
NAILS

Cut Steel.....	\$4 25
Cut Iron.....	4 35

Wire

Common.....	3 05
Cement Coated.....	3 05

(Continued on page 140)

PERFORATED METALS

All Sizes and Shapes of Holes
In Steel, Zinc, Brass, Copper, Tinplate, etc.
For All Screening, Ventilating and Draining
EVERYTHING IN PERFORATING METAL

THE HARRINGTON & KING PERFORATING CO.

5649 FILLMORE ST.—CHICAGO, ILL. U. S. A.
NEW YORK OFFICE: 114 LIBERTY ST.

EARLE'S VENTILATOR

IMPROVED REVOLVING



Write
to-day
for
complete
catalog

It runs in a self-lubricating bearing that is not affected by heat or cold. It is noiseless and produces an upward current of air. No down draft. It will satisfy and give you a good profit.

BERGER BROS. CO.

229 to 237 ARCH STREET
WAREHOUSES AND FACTORY, 106 TO 114 BREAD STREET
PHILADELPHIA, PA.
Manufacturers of "Quaker City" line of Mills, Ends, Caps and Outlets

EVERYTHING USED IN SHEET METAL WORK**QUICK SHIPMENT**

FROM CLEVELAND WAREHOUSE

Charcoal Bright Tin Plate

Up to 4A Grade
Up to 4X Gauge

Imported Dairy Tin Sheets

Up to D4x—48x96 Size

Monel Metal

No. 18 to 24 Gauge
Hot Rolled and Cold Rolled Polished

Osborn's Lead Cote Sheets

No. 18 to 28 Gauge

The J. M. & L. A. OSBORN CO.
CLEVELAND

Buffalo Warehouse, 64-68 Rapin Street



The difference between the two kinds of Galvanized Shingles is this:

HAND Dipped Galvanized Shingles are made from prime tin plate and immersed in molten zinc—all edges, as well as both sides are coated.

The other kind are made from sheets which come already galvanized.

We make both kinds.

CORTRIGHT METAL ROOFING CO.
50 N. 23rd Street, Philadelphia
528 S. Clark Street, Chicago

CORTRIGHT METAL SHINGLES**The NEW IMPROVED "STANDARD" Rotable Ventilator**

Patents pending

This favorite cone-shaped ventilator is now improved in several important points.

The weight of the ventilator body is now carried on a concave thrust bearing nested in the apex of the conical body. This bearing turns upon the pivot point of the stationary center spindle.

The bronze Guide Bushings are now made of non-corrosive bronze which minimizes friction and any tendency to screech when body is rotating.

There are other new features. Write today for new catalog and price list.

STANDARD VENTILATOR CO., LEWISBURG, PA.

BIG Profits Here

THESE Buckeye Steel Garages are making big money for sheet metal men. They're popular in every section of the country. One Philadelphia man sold 96 last year. One in Albany, N. Y., sold 81.

No Investment Required

YOU have the same opportunities. You can sell just as many—perhaps more. For the sheet metal man is the logical dealer for steel garages. And no investment is required. You show your trade only blue prints, photographs and samples of material. We ship the garages to you. You install them and make a double profit—one on the garage and another on the installation.

You can't afford to pass up this chance to "cash in" on the big demand for Buckeye Steel Garages. Get all the facts about this big opportunity by writing today to

THE THOMAS & ARMSTRONG CO.
Dept. M. W. London, Ohio

Makers of Armstrong Radiator Shields

BUCKEYE GARAGES

ADVERTISERS' INDEX

The dash (—) indicates that the advertisement runs on a regular schedule but does not appear in this issue.

A	L
Aeolus Dickinson Co.	Lalance & Grosjean Mfg. Co. —
American Foundry & Furnace Co.	Lamneck & Co., W. E.116
American Furnace Co.109	Langenberg Mfg. Co.
American Rolling Mill Co.	Lennox Furnace Co.
American Steel & Wire Co.143	Liberty Foundry Co.
American Tube & Stamping Co.112	Lupton's Sons Co., David.135
American Wood Register Co. —	
Arex Co.	M
	Marshalltown Heater Co.
B	Marshalltown Mfg. Co.141
Beh and Co.110	May-Fiebeger Co.
Berger Bros. Co.139	Merchant & Evans Co.
Berger Co., L. D.	Meyer Bros. Co., F., The.
Bernz Co., Otto143	Meyer Furnace Co., The.
Bertsch & Co.143	Milwaukee Corr. Co. Back Cover
Brillion Furnace Co.	Monitor Furnace Co.
Burgess Soldering Furnace Co. —	Mt. Vernon Furn. & Mfg. Co. —
	Mueller Furnace Co., L. J.
C	N
Chicago Elbow Machine Co.141	National Enameling & Stamp-
Chicago Furnace Supply Co.110	ing Co.
Chicago Solder Co.	National Heatcraft Inst.
Clark-Smith Hardware Co.143	New Jersey Zinc Sales Co., The
Clayton & Lambert Mfg. Co. —Front Cover
Cleveland & Buffalo Transit Co. —	Northwestern Stove Repair Co.112
Cleveland Castings Pattern Co. 111	
Cleveland Co-operative Stove Co.	O
Coes Wrench Co.	Oakland Fdy. Co.
Connors Paint Co., Wm.110	Osborn Co., The J. M. & L. A.139
Cortright Metal Roofing Co.139	
Copper & Brass Research Association	P
	Parker-Kalon Corp.
D	Peck, H. E.145
Davis and Co., Inc., C. S.113	Peck, Stow & Wilcox Co.
Diamond Mfg. Co.	Pecora Paint Co.
Dieckmann Co., Ferdinand.	Peninsular Stove Co.
Diener Mfg. Co.	Polk, R. L.146
Double-Duty Mfg. Co.	
Double-Duty Mfg. Co.	Q
Dreis & Krump Mfg. Co.141-143	Quaker Mfg. Co.
Dunning, Inc., E. C.110	Quick Meal Stove Co.
	Quincy Pattern Co.111
E	R
Eaglesfield Ventilator Co.	Robinson, A. H., Co.108
Excelsior Steel Furn. Co.	Robinson Furnace Co.
	Roemer Heating Co., J.
F	Rock Island Register Co.
Fanner Mfg. Co.112	Ross-Gould Co.143
Floral City Heater Co.111	Royal Ventilating Co.
Forest City Fdy. & Mfg. Co.	Rybolt Heater Co.
Fort Shelby Hotel	
Friedley-Voshardt Co.	S
Friedman & peck	Sall Mountain Co.
	Schwab & Sons, R. J.
G	Security Stove & Mfg. Co.
Gerock Bros. Mfg. Co.	Sheet Steel Trade Ex. Comm.
Granite City Steel Works.	Special Chemicals Co.
Gray & Dudley Co.	Standard Fdy. & Mfg. Co.
Great Lakes Supply Co.	Standard Furn. & Supply Co.
	Standard Ventilator Co.139
H	Stearns Register Co.
Hall-Neal Co.111	St. Louis Heating Co.
Harrington & King Perf. Co.139	St. Louis Tech. Inst.146
Hart & Cooley Co.	Sturtevant Co.
Henry Furnace & Fdy. Co.	Success Heater Mfg. Co.
Hero Furnace Co.	
Hess-Snyder Co.111	T
Hessler Co., H. E.141	Tayco Register Shield Co.
Homer Furnace Co.	Taylor Co., N. & G.
Hopson Co., W. C.	Technical Products Co.
Howes Co., S. M.	Tuttle & Bailey Mfg. Co.
	Thatcher Co.
I	Thomas & Armstrong Co.106-139
Independent Register & Mfg. Co.	
Inland Steel Co.	U
International Heater Co.	Unishear Co., The, Inc.
	Utica Heater Co.107
K	V
Kernchen Co.146	Vedder Pattern Works111
Kirk-Latty Co.112	Viking Shear Co.
Kruse Co.	W
	Warm Air Furnace Fan Co.
	Walworth Run Fdy. Co.113
	Watermann-Waterbury Co.
	Western Steel Products Co.109
	Wheeling Corr. Co.137
	Whitney Mfg. Co., W. A.141
	Whitney Metal Tool Co.
	Williamson Heater Co.108
	Wise Furnace Co.106
	Z
	Ziener Aluminum Solder Co.146

Markets—Continued from page 138

NETTING, POULTRY

Galvanized before weav-	
ing	57½-58%
Galvanized after weaving.58½-59%	

PASTE

Asbestos Dry Paste:

200-lb. barrel	\$16 00
100-lb. barrel	8 75
35-lb. pail	3 50
10-lb. bag	1 10
5-lb. bag	60
2½-lb. cartons	35

PIPE

Conductor

Cor. Rd., Plain Rd. or Sq.

"Interlock" Galvanized

Crated and nested (all gauges)	75-2½%
Crated and not nested (all gauges)	70-15%

"Milcor" "Tittlelock" Uniform

Blue Stove	
25 gauge, 5 inch U. C. nested	11 00
25 gauge, 6 inch U. C. nested	13 00
25 gauge, 7 inch U. C. nested	14 00
30 gauge, 5 inch U. C. nested	10 00
30 gauge, 6 inch U. C. nested	10 50
30 gauge, 7 inch U. C. nested	13 00

T-Joint Made up

6-inch, 25 ga.	Per 100 22 50
---------------------	---------------

Furnace Pipe

Double Wall Pipe and Pipe Fittings	40%
Single Wall Pipe, Round Iron Pipe Galvanized.	40%
Galvanized and Black Fittings	40%
Milcor Galvanized Pipe and Fittings	40%

Lead

Per 100 lbs.	\$12 50
-------------------	---------

POKERS, STOVE

Wrt Steel, str't or bent,	per doz. \$0 75
Nickel Plated, coil handles,	per doz. 1 10

POKERS, FURNACE

Each	\$0 50
------------	--------

PULLEYS

Furnace Tackle.	per doz. \$0 60
Furnace Screw (enameled)	per doz. 6 00
.....	per doz. 75

Ventilating Register

Per gross	9 00
Small, per pair.	30
Large, per pair.	50

PUTTY

Commercial Putty, 100-lb. Kits	\$3 40
--------------------------------------	--------

QUADRANTS

Malleable Iron Damper	10%
-----------------------------	-----

REDUCERS—Oval Stove Pipe

Per Doz.	
7-6, 1 doz. in carton.	\$2 00

BASEBOARD REGISTERS

Excelsior	50%
-----------------	-----

FLOOR REGISTERS AND BORDERS

Cast Iron	20%
Steel and Semi-Steel	40%
In lots less than 50.	35¼%
Baseboard	40%
In lots less than 50.	35¼%
Adjustable Ceiling Ventilators	40%
Register Faces—Cast and Steel	
Japanned, Bronzed and Plated, 4x6 to 14x14	40%
In lots less than 50.	35¼%
Large Register Faces—Cast, 14x14 to 25x14.	50%
Large Register Faces—Steel, 14x14 to 25x14.	65%
In lots less than 50.	60%

RIDGE ROLL

Galv., Plain Ridge Roll, 75-10-5% v'dia	
Galv., Plain Ridge Roll, 75-10% cr'd	75-10%
Globe Finales for Ridge Roll.	50%

ROOFING

Per Square

Best grade, slate surf. prep'd ..	\$3 30
Best tale surfaced.	2 05
Medium tale surfaced.	2 00
Light tale surfaced.	1 30
Red Rosin Sheetting, per ton	57 00

SCREWS

Sheet Metal

7, ½x½, per gross.	\$0 52
No. 10, ¾x1/16, per gross ..	53
No. 14, ¾x¼, per gross.	59

SHEARS, TINNERS' & MACHINISTS.

Viking	\$22 00
--------------	---------

Lennox Throatless

No. 18	35%
Shear blades	10%
(f. o. b. Marshalltown, Iowa.)	

SHIELDS, REGISTER

No. 1 "Gem" floor	\$12 00 doz.
No. 2 "Gem" wall	6 00 doz.

SHOES

Milcor

Galv. 25 Gauge, Plain or eorg. round flat crimp.	50%
26 gauge round flat crimp.	45%
24 gauge round flat crimp.	15'

SNIPS, TINNERS'

Clover Leaf	40 & 10%
National	40 & 10%
Star	50%
Milcor	Net

SQUARES

Steel and Iron	Net
(Add for bluing, \$3 per doz. net.)	

Mitre

Try

Try and Bevel

Try and Mitre

Fox's

Winterbottom's

STOPPERS, FLUE

Common	per doz. \$1 10
Gem, No. 1.	per doz. 1 10
Gem, flat, No. 2.	per doz. 1 00

VENTILATORS

Standard	30 to 40'
----------------	-----------

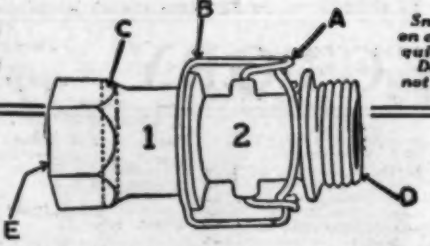
WIRE

Plain annealed wire, No. 8, per 100 lbs.	\$3 05
Galvanized barb wire, per 100 lbs.	3 90
Wire cloth—Black painted, 12-mesh, per 100 sq. ft.	1 65
Cattle Wire—galvanized catch weight spool, per 100 lbs.	3 75
Galvanized Hog Wire, 30 rod spool, per spool.	3 25
Galvanized plain wire, No. 9, per 100 lbs.	3 50
Stave Pipe, per stone.	1 10

WRINGERS

No. 790, Guarantee	each \$5 40
No. 770, Bicycle	each 4 95
No. 670, Domestic	each 4 65
No. 110, Brighton	each 4 00
No. 750, Guarantee	each 5 40
No. 740, Bicycle	each 4 90
No. 33, Pioneer	each 5 55
No. 2, Superb	each 3 90

The simplest hose coupling made



Snap on or off quickly Does not leak

HESSLER Perfect Hose Connection

YOU and your customers, everybody who uses a hose will welcome the Hessler Hose Connection. It saves hose length and the hose, no kinking or twisting—no splashing, no leakage and you snap it on or off in a wink. The Hessler will be a big, fast seller and a real profit maker. Order a sample lot now—made in four sizes. Write today for price and circulars.

H. E. HESSLER CO. Syracuse, New York

CHICAGO STEEL SLITTING SHEAR

LIGHT—POWERFUL DURABLE



Capacity 10 gauge sheets
Any Length or Width
Flat Bars 3/16x2"
Weight 22 pounds
Price \$12.50 Net
F. O. B. Chicago

Made of pressed steel and equipped with hold-down. Blades of highest grade crucible steel. Most indispensable high grade shears made. Equal to other shears selling at over twice the price. **ORDER YOURS TODAY.**

DREIS & KRUMP MFG. CO., 7404 Leomis St., Chicago

Advertising Is News In the Business Papers

THE advertising section of the class, trade or technical magazine is a news section.

It supplies vocational information that supplements and dovetails with that supplied in the editorial pages.

The latter supply the answer to the question, "How?" The former tell "what" and "where."

If your announcement is not listed in the business papers covering your field, the answer to those questions is being supplied by your competitors.

The news of the advertising section is too important to the reader not to be important to the advertiser as well.

It is important to you.

Whitney Lever Punches

Widest known—Most universally used



Skyline Punch

NEW SKYLIGHT CLOSE CORNER FLANGE PUNCH

Every Sheet Metal Worker Needs One.

Weights Only 10 Lbs.

1-2 Inch Opening Above Die Top.



Skyline Punch

EASIEST OPERATED
QUICKEST CHANGED
FREQUENTLY PAY FOR THEMSELVES
ON FIRST JOB

Over 40,000 In Use

MADE IN 6 SIZES

OTHERS FOLLOWING



No. 2 Punch

ASK YOUR JOBBER

or

Write us, for circulars and prices.



No. 4 Tinner's Punch

W. A. Whitney Mfg. Co.

715 Park Ave.,
ROCKFORD, ILL.



No. 8 Punch

MARSHALLTOWN

Throatless Shears



HERE is a machine that will do all your sheet cutting. It takes sheets of any size and does accurate work quickly. It is our No. 18 Hand Power Shear, the size for the average shop. It is high grade throughout, being made of the strongest and toughest metals.

It sells at a price which makes it possible for you to own one NOW.

Covered By Patent No. 1020508

Address Dept. A. A. and ask for our catalog and price list covering our entire line.

MARSHALLTOWN MFG. CO., Marshalltown, Iowa

MAKE YOUR OWN ELBOWS—

Any Size in Two Minutes with this Machine.

JUST take your straight pipe—fasten the form or jig to it and in two minutes you have your 3 or 4 piece adjustable elbow all ready for use and any size you want.

PURNELL ELBOW EDGING and CUTTING MACHINE

It is simple, sound and constructed of the very best materials—both installers and manufacturers are using it. No more large stock for the installer. Enables you to make adjustable elbows any size for each job at once when you need them.

Write today for circular giving complete description and price.

Chicago Elbow Machine Co.

MAIN OFFICE: 828 N. Boulevard,
Oak Park, Ill.



Range of capacity 7 in. to 36 in. Elbows of No. 24 gauge and lighter

BUYERS' DIRECTORY

Asbestos Paper.
Sall Mountain Co., Chicago, Ill.

Asbestos Products
Sall Mountain Co., Chicago, Ill.

Bale Ties.
American Steel & Wire Co., Chicago, Ill.

Blowers.
Sturtevant Co., B. F., Boston, Mass.

Boiler-Stove.
The Kirk-Latty Co., Cleveland, Ohio

Brakes—Bending.
Dreis & Krump Mfg. Co., Chicago, Ill.

Brakes—Cornice.
Dreis & Krump Mfg. Co., Chicago, Ill.

Brass and Copper.
Copper & Brass Research Association, New York
Hussey & Co., C. G., Pittsburgh, Pa.
Merchant & Evans Co., Philadelphia, Pa.

Cans—Garbage.
Osborn Co., The J. M. & L. A., Cleveland, Ohio

Castings—Malleable.
Fanner Mfg. Co., Cleveland, Ohio

Ceilings—Metal.
Friedley-Voshardt Co., Chicago, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.
Wheeling Corrugating Co., Wheeling, W. Va.

Chaplets.
Fanner Mfg. Co., Cleveland, Ohio

Chain—Sash.
Parker-Kalon Corp., New York, N. Y.

Chimney Tops.
Standard Ventilator Co., Lewisburg, Pa.

Cleaners—Furnace.
Sturtevant Co., B. F., Boston, Mass.

Cleaners—Suction.
Sturtevant Co., B. F., Boston, Mass.

Copper.
Copper & Brass Research Association, New York

Cornices.
Friedley-Voshardt Co., Chicago, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.

Out-offs—Rain Water.
Milwaukee Corrugating Co., Milwaukee, Wis.

Dampers.
S. M. Howes Co., Charlestown, Mass.

Damper Clips.
S. M. Howes Co., Charlestown, Mass.

Diffuser—Air Duct.
Aeolus-Dickinson Co., Chicago, Ill.

Doors—Metal.
Lupton's Sons Co., David, Philadelphia, Pa.

Eaves Trough.
Berger Bros. Co., Philadelphia, Pa.
Berger Co., L. D., Philadelphia, Pa.
Clark-Smith Hardware Co., Peoria, Ill.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
New Jersey Zinc Sales Co., The, New York, N. Y.
Wheeling Corrugating Co., Wheeling, W. Va.

Elbows and Shoes—Conductor.
American Rolling Mill Co., Middletown, Ohio
Dieckmann Co., Cincinnati, Ohio

Double-Duty Mfg. Co., Aurora, Ill.

Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.

Enamel Wire.
Lalanc & Grosjean Mfg. Co., Chicago, Ill.

Wood Faces—Cold Air.
American Wood Register Co., Plymouth, Ind.
Eaglesfield Ventilator Co., Indianapolis, Ind.
Milwaukee Corrugating Co., Milwaukee, Wis.

Fences.
American Steel & Wire Co., Chicago, Ill.

Flue Thimbles.
Milwaukee Corrugating Co., Milwaukee, Wis.

Furnace Cement—Asbestos.
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Milwaukee Corrugating Co., Milwaukee, Wis.
Pecora Paint Co., Philadelphia, Pa.
Sall Mountain Co., Chicago, Ill.

Furnace Cement—Liquid.
Technical Products Co., Pittsburgh, Pa.

Furnace Cleaners.
Sturtevant Co., B. F., Boston, Mass.
A. H. Robinson Company, Cleveland, Ohio

Furnace Fans.
Sturtevant Co., B. F., Boston, Mass.
Warm Air Furnace Fan Co., The, Cleveland, Ohio

Furnace Rings.
Milwaukee Corrugating Co., Milwaukee, Wis.
Walworth Run Fdy. Co., Cleveland, Ohio

Furnaces—Warm Air.
American Furnace Co., St. Louis, Mo.
American Foundry & Furnace Co., Bloomington, Ill.
Brillion Iron Works, Brillion, Wis.

Chicago Furnace Supply Co., Chicago, Ill.
Cleveland Co-operative Stove Co., Cleveland, Ohio
Excelsior Steel Furnace Co., Chicago, Ill.

Floral City Heater Co., Monroes, Mich.

Forest City Fdy. & Mfg. Co., Cleveland, Ohio

Hall-Neal Furnace Co., Indianapolis, Ind.

Henry Furnace & Fdy. Co., Cleveland, Ohio

Hero Furnace Co., Sycamore, Ill.

Hess-Snyder Co., Massillon, Ohio

Homer Furnace Co., Coldwater, Mich.

International Heater Co., Utica, N. Y.

Kruse Co., Indianapolis, Ind.

Lamneck Co., W. E., Columbus, Ohio

Langenberg Mfg. Co., St. Louis, Mo.

Lennox Furnace Co., Marshalltown, Ia.; Syracuse, N. Y.

Liberty Foundry Co., St. Louis, Mo.

Marshalltown Heater Co., Marshalltown, Iowa

May-Fieberger Furnace Co., Newark, Ohio

Meyer Furnace Co., The Peoria, Ill.

Monitor Furnace Co., Cincinnati, Ohio

Standard Furnace & Supply Co., Omaha, Neb.

St. Louis Heating Co., St. Louis, Mo.

Success Heater Mfg. Co., Des Moines, Iowa

Thomas & Armstrong Co., London, Ohio

Thatcher Co., Chicago, Ill.

Utica Heater Co., Utica, N. Y.

Waterman-Waterbury Co., Minneapolis, Minn.

Western Steel Products Co., Duluth, Minn.

Wise Furnace Co., Akron, Ohio

Williamson Heater Co., Cincinnati, Ohio

Garages—Metal.
Milwaukee Corrugating Co., Milwaukee, Wis.

Glass—Wire.
Lupton's Sons Co., David, Philadelphia, Pa.

Grilles.
Diamond Mfg. Co., Wyoming, Pa.

Harrington & King Perforating Co., Chicago, Ill.

Hart & Cooley Co., New Britain, Conn.

Independent Register & Mfg. Co., Cleveland, Ohio

Tuttle & Bailey Mfg. Co., Chicago, Ill.

Grilles—Store Front.
Tuttle & Bailey Mfg. Co., Chicago, Ill.

Guards—Machine and Belt.
Harrington & King Perforating Co., Chicago, Ill.

Handles—Boiler.
Berger Bros. Co., Philadelphia, Pa.

Hangers—Eaves Trough.
Berger Co., L. D., Philadelphia, Pa.

Milwaukee Corrugating Co., Milwaukee, Wis.

Heaters—Cabinet.
Gray & Dudley Co., Nashville, Tenn.

Mueller Furnace Co., L. J., Milwaukee, Wis.

Peninsular Stove Co., Detroit, Mich.

Waterman-Waterbury Co., Minneapolis, Minn.

Heaters—School Room.
Floral City Heater Co., Monroe, Mich.

Hero Furnace Co., Sycamore, Ill.

International Heater Co., Utica, New York

Meyer Furnace Co., The Peoria, Ill.

Standard Furnace & Supply Co., Omaha, Neb.

Waterman-Waterbury Co., Minneapolis, Minn.

Hooks—Conductor.
Berger Co., L. D., Philadelphia, Pa.

Hotels.
Fort Shelby Hotel, Detroit, Mich.

Humidifiers.
Robinson Furnace Co., Chicago, Ill.

Roemer Heating Co., Cleveland, Ohio

Jobbers—Hardware.
Clark-Smith Hardware Co., Peoria, Ill.

Kitchen Utensils.
Lalanc & Grosjean Mfg. Co., Chicago, Ill.

Lath—Expanded Metal.
Milwaukee Corrugating Co., Milwaukee, Wis.

Machines—Crimping.
Bertsch & Co., Cambridge City, Ind.

Machinery—Culvert.
Bertsch & Co., Cambridge City, Ind.

Machines—Tinsmiths.
Bertsch & Co., Cambridge City, Ind.

Chicago Elbow Machine Co., Oak Park, Ill.

Dreis & Krump Mfg. Co., Chicago, Ill.

Marshalltown Mfg. Co., Marshalltown, Iowa

Osborn Co., The J. M. & L. A., Cleveland, Ohio

Peck, Stow & Wilcox Co., Southington, Conn.

Unishear Co., The, New York, N. Y.

Whitney Mfg. Co., W. A., Rockford, Ill.

Whitney Metal Tool Co., Rockford, Ill.

Mailing Lists.
R. L. Polk Co., Detroit, Mich.

Ross-Gould Co., St. Louis, Mo.

Metals—Perforated.
Diamond Mfg. Co., Wyoming, Pa.

Harrington & King Perforating Co., Chicago, Ill.

Miters.
Friedley-Voshardt Co., Chicago, Ill.

Milwaukee Corrugating Co., Milwaukee, Wis.

Miters—Eaves Trough.
Lupton's Sons Co., David, Philadelphia, Pa.

Milwaukee Corrugating Co., Milwaukee, Wis.

Nails—Slatting.
Hussey & Co., C. G., Pittsburgh, Pa.

Nails—Wire.
American Steel & Wire Co., Chicago, Ill.

Oil Burners.
Security Stove & Mfg. Co., Kansas City, Mo.

Quaker Mfg. Co., Chicago, Ill.

Ornaments—Sheet Metal.
Friedley-Voshardt Co., Chicago, Ill.

Gerock Bros. Mfg. Co., St. Louis, Mo.

Milwaukee Corrugating Co., Milwaukee, Wis.

Paint.
Connors Paint Mfg. Co., Wm., Troy, N. Y.

Pecora Paint Co., Philadelphia, Pa.

Patterns—Furnace & Stove.
Cleveland Castings Pattern Co., Cleveland, Ohio

Quincy Pattern Co., Quincy, Ill.

Vedder Pattern Works, Troy, N. Y.

Pipe and Fittings—Furnace.
Chicago Furnace Supply Co., Chicago, Ill.

Dunning, Inc., E. C., Milwaukee, Wis.

Excelsior Steel Furnace Co., Chicago, Ill.

Henry Furnace & Fdy. Co., Cleveland, Ohio

Lamneck Co., W. E., Columbus, Ohio

Meyer & Bro. Co., F., Peoria, Ill.

Milwaukee Corrugating Co., Milwaukee, Wis.

Mueller Furnace Co., L. J., Milwaukee, Wis.

Osborn Co., The J. M. & L. A., Cleveland, Ohio

Robinson Furnace Co., Chicago, Ill.

Standard Furnace & Supply Co., Omaha, Neb.

Pipe and Fittings—Stove.
Excelsior Steel Furnace Co., Chicago, Ill.

Meyer & Bro. Co., F., Peoria, Ill.

Milwaukee Corrugating Co., Milwaukee, Wis.

Pipe—Conductor.
Berger Bros. Co., Philadelphia, Pa.

Clark-Smith Hdw. Co., Peoria, Ill.

Dieckmann Co., Ferdinand, Cincinnati, Ohio

Friedley-Voshardt Co., Chicago, Ill.

Hussey & Co., C. G., Pittsburgh, Pa.

Lupton's Sons Co., David, Philadelphia, Pa.

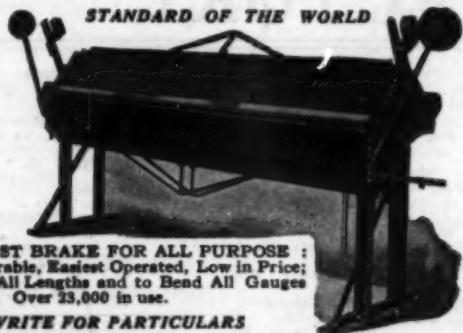
Milwaukee Corrugating Co., Milwaukee, Wis.

New Jersey Zinc Sales Co., The, New York, N. Y.

Wheeling Corrugating Co., Wheeling, W. Va.

CHICAGO STEEL CORNICE BRAKES

STANDARD OF THE WORLD



THE BEST BRAKE FOR ALL PURPOSE :
Most Durable, Easiest Operated, Low in Price;
Made in All Lengths and to Bend All Gauges
of Metal. Over 25,000 in use.

WRITE FOR PARTICULARS

DREIS & KRUMP MFG. CO., 7404 Loomis Street, CHICAGO

**ORDER TORCHES NOW
FOR WINTER TRADE**14 YEARS
OF EXPERIENCE14 YEARS
OF QUALITY

No. 75 Qt.-No. 30 Pt.
Gasoline-Kerosene

INSIST on the "ALWAYS RELIABLE"
torches and furnaces so your customers will
receive the best and longest service.

MADE IN ALL SIZES AND GRADES

Fitted with several patented improvements

Most jobbers stock this line. Others will gladly order.

OTTO BERNZ CO., INC., Newark, N. J.

Stocks in Newark, N. J., New York City
Chicago and San Francisco

Offices in Newark, N. J., New York C
Chicago, Fort Worth, Denver, Helena
Mont., San Francisco, Los Angeles,
Seattle, and St. Thomas, Ont.

ALL FULLY
GUARANTEED**Read This Practical Book NOW****SNOW'S FURNACE HEATING**
(Enlarged Revised Edition)

264 Pages
PRICE, \$3.00
Postpaid

AMERICAN ARTISAN 620 S. Michigan Avenue
Chicago, Illinois

A book that deals with the different types
of furnaces, their construction, proper loca-
tion and setting together with furnace fit-
tings. It is the standard authority.
This new edition contains a chapter cov-
ering the main features of one pipe or pipe-
less furnace heating, which has become a
big factor in warm air heating.

Contents—Furnaces: House Heating, Com-
bination Systems; Air, Heating and Ventila-
tion of School Buildings; Heating of Pub-
lic Buildings, Churches and Stores; Fan
Furnace Combination System; Temperature
Control; Estimates and Contracts; Fuels;
Miscellaneous Tables and Data; Furnace
Fittings; Miscellaneous Notes, from Various
Sources on Furnace Heating.

Order your copy now and ask for
our 10 page catalog of books.

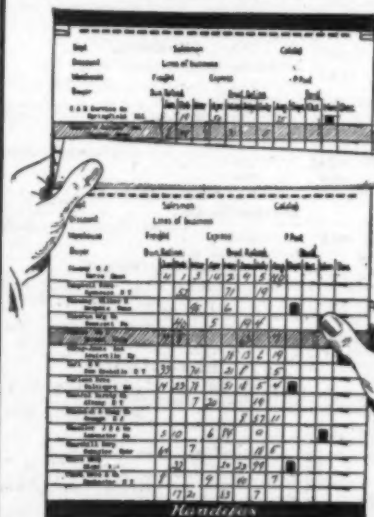
BOOK DEPT.

Please Mention
**AMERICAN ARTISAN
AND
HARDWARE RECORD**

When writing to advertisers

Sheets of Cards**make Speedy Visible Records**

Handifax—A Wonderful Invention—Helps Business

Visualizes recorded facts
to executives50 Card-sheets show
1000 cardsVisible space on each
card 1/4 or 1 inchEasy to analyze graphic
chart "picture"Color signals "flag"
your attentionCuts record-keeping
costs 40%Quick for use in refer-
ence or posting.As handy to use as a
sheet of paperSheets of cards can be
typewrittenGood for all kinds of
recordsAny size, 100, 1,000,
10,000, 1,000,000Your present system can
be usedVery low cost—very
compact

Sales Agents Wanted

Ross-Gould Co.

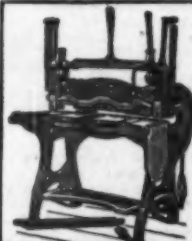
335 N. Tenth St. St. Louis, Mo.

Send
for Free
Samples**Handifax****WIRE**electrical,
rope, barb-
ed, plain,
nails (bright

and coated), tacks, spikes, bale ties, hoops, springs,
netting, wire fences, steel posts, steel gates, trolley
wire, rail bonds, flat wire, cold rolled strip steel,
piano wire, round and odd-shape wire, screw stock,
concrete reinforcement. Aerial tramways.

Illustrated books describing uses, FREE

**American Steel & Wire
Company**

Sales Offices: Chicago, New York
and All Principal Cities**TREADLE SHEAR**

This TREADLE GAP SHEAR is
made in all standard sizes for No.
14 and lighter gauge sheets. With
it, sheets can be squared, trimmed
or slit.

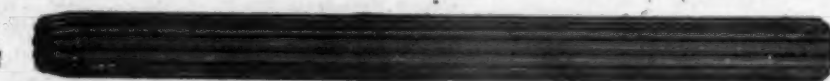
We make a complete line of
shears, punches and bending rolls,
all sizes for hand or belt drive.
Write for Catalog "S."

BERTSCH & COMPANY

Cambridge City, Ind.

Plecker's Galvanized Eave Trough and Corrugated Expanding Conductors

Made of
Keystone
Copper Bearing
Steel



Costs no more
Lasts longer
Therefore
Cheapest

CLARK-SMITH HARDWARE CO. . . . PEORIA, ILLINOIS

When writing mention AMERICAN ARTISAN—Thank you!

BUYERS' DIRECTORY

- Fence—Steel Fence.**
American Steel & Wire Co., Chicago, Ill.
- Fences.**
Bertsch & Co., Cambridge City, Ind.
Parker-Kalon Corp., New York, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Whitney Mfg. Co., W. A., Rockford, Ill.
Whitney Metal Tool Co., Rockford, Ill.
- Fences—Combination Bench and Hand.**
Parker-Kalon Corp., New York, N. Y.
Whitney Metal Tool Co., Rockford, Ill.
Whitney Mfg. Co., W. A., Rockford, Ill.
- Fences—Hand.**
Whitney Metal Tool Co., Rockford, Ill.
Whitney Mfg. Co., W. A., Rockford, Ill.
- Patty—Stove.**
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Pecora Paint Co., Philadelphia, Pa.
- Quadrants—Dampers.**
Parker-Kalon Corp., New York, N. Y.
- Radiator Cabinets.**
Tuttle & Bailey Mfg. Co., Chicago, Ill.
- Ranges—Combination Gas & Coal.**
Quick Meal Stove Co., St. Louis, Mo.
Thatcher Co., Newark, N. J.
- Ranges—Gas.**
Quick Meal Stove Co., St. Louis, Mo.
- Registers—Warm Air.**
American Wood Register Co., Plymouth, Ind.
Chicago Furnace Supply Co., Chicago, Ill.
Eaglesfield Ventilator Co., Indianapolis, Ind.
Excelator Steel Furnace Co., Chicago, Ill.
Hart & Cooley Co., New Britain, Conn.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Independent Register & Mfg. Co., Cleveland, Ohio
Lamneck & Co., W. E., Columbus, Ohio
Mayer & Bro. Co., F., Peoria, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.
Mueller Furnace Co., L. J., Milwaukee, Wis.
Robinson Furnace Co., Chicago, Ill.
Rock Island Register Co., Rock Island, Ill.
Standard Furnace & Supply Co., Omaha, Neb.
Stearns Register Co., Detroit, Mich.
Tuttle & Bailey Mfg. Co., Chicago, Ill.
Walworth Run Fdy. Co., Cleveland, Ohio
- Registers—Wood.**
American Wood Register Co., Plymouth, Ind.
Chicago Furnace Supply Co., Chicago, Ill.
Eaglesfield Ventilator Co., Indianapolis, Ind.
- Repairs—Stove and Furnace.**
Hessler Co., H. E., Syracuse, N. Y.
Northwestern Stove Repair Co., Chicago, Ill.
- Ridging.**
American Rolling Mill Co., Middletown, Ohio
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
- Rivets—Stove.**
The Kirk-Latty Co., Cleveland, Ohio
- Roasters.**
Lalanc & Greenjean Mfg. Co., Chicago, Ill.
- Rods—Stove.**
The Kirk-Latty Co., Cleveland, Ohio
- Rolls—Forming.**
Bertsch & Co., Cambridge City, Ind.
- Roofing Cement.**
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Pecora Paint Co., Philadelphia, Pa.
- Roof—Flashing.**
Hessler Co., H. E., Syracuse, N. Y.
Milwaukee Corrugating Co., Milwaukee, Wis.
- Roofing—Iron and Steel.**
American Roofing Mill Co., Middletown, Ohio
Cortright Metal Roofing Co., Philadelphia, Pa.
Friedley-Voshardt Co., Chicago, Ill.
Inland Steel Co., Chicago, Ill.
Merchant & Evans Co., Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Wheeling Corrugating Co., Wheeling, W. Va.
- Roofing—Tin.**
Taylor Co., N. & G., Philadelphia, Pa.
Wheeling Corrugating Co., Wheeling, W. Va.
- Roofing—Zinc.**
New Jersey Zinc Sales Co., The, New York, N. Y.
- Rubbish Burners.**
Hart & Cooley Co., New Britain, Conn.
- Salt—Ammoniac.**
Special Chemicals Co., Waukegan, Ill.
- Schools—Sheet Metal Pattern Drafting.**
St. Louis Technical Institute, St. Louis, Mo.
- Screws—Sheet Metal.**
Parker-Kalon Corp., New York, N. Y.
- Screens—Perforated Metal.**
Harrington & King Perforating Co., Chicago
- Shears—Hand and Power.**
Double-Duty Mfg. Co., Aurora, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa
Peck, Stow & Wilcox Co., Southington, Conn.
Unishear Co., The, New York
Viking Shear Co., Erie, Pa.
- Sheets—Black and Galvanized.**
American Rolling Mill Co., Middletown, Ohio
Davis Co., Inc., C. S., Chicago, Ill.
Inland Steel Co., Chicago, Ill.
Merchant & Evans Co., Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Taylor Co., N. & G., Philadelphia, Pa.
Wheeling Corrugating Co., Wheeling, W. Va.
- Sheets—Iron.**
American Rolling Mill Co., Middletown, Ohio
Merchant & Evans Co., Philadelphia, Pa.
- Shingles—Tin.**
Davis Co., Inc., C. S., Chicago, Ill.
Merchant & Evans Co., Philadelphia, Pa.
Taylor Co., N. & G., Philadelphia, Pa.
- Shingles—Zinc.**
New Jersey Zinc Sales Co., The, New York, N. Y.
- Shields—Register.**
Beh & Co., New York, N. Y.
Tayco Register Shield Co., Menasha, Wis.
- Shingles and Tiles—Metal.**
Cortright Metal Roofing Co., Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
Wheeling Corrugating Co., Wheeling, W. Va.
- Shingles—Asphalt.**
Sall Mountain Co., Chicago, Ill.
- Shingles—Zinc.**
Milwaukee Corrugating Co., Milwaukee, Wis.
- Sifters—Ash.**
Diener Mfg. Co., G. W., Chicago, Ill.
- Sky Lights.**
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
- Snips.**
Peck, Stow & Wilcox Co., Southington, Conn.
- Solder.**
Chicago Solder Co., Chicago, Ill.
Double-Duty Elbow Co., Aurora, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.
- Solder—Aluminum.**
Ziener Aluminum Solder Co., Rockford, Ill.
- Soldering Furnaces.**
Berns Co., Otto, Newark, N. J.
Burgess Soldering Furnace Co., Columbus, Ohio
Clayton & Lambert Mfg. Co., Detroit, Mich.
Diener Mfg. Co., G. W., Chicago, Ill.
Double Blast Mfg. Co., North Chicago, Ill.
Quick Meal Stove Co., St. Louis, Mo.
- Soldering Supplies.**
Double-Duty Elbow Co., Aurora, Ill.
Special Chemicals Co., Waukegan, Ill.
- Specialties—Hardware.**
Diener Mfg. Co., G. W., Chicago, Ill.
Hessler Co., H. E., Syracuse, N. Y.
- Stars—Hard Iron Cleaning.**
Fanner Mfg. Co., Cleveland, Ohio
- Statuary.**
Friedley-Voshardt Co., Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.
- Stampings—Metal.**
American Tube & Stamping Co., Bridgeport, Conn.
Dunning, Inc., E. C., Milwaukee, Wis.
Stearns Register Co., Detroit, Mich.
- Stove Pipe Reducers.**
Milwaukee Corrugating Co., Milwaukee, Wis.
- Stoves—Camp.**
Quick Meal Stove Co., St. Louis, Mo.
- Stoves—Gasoline and Oil.**
Quick Meal Stove Co., St. Louis, Mo.
- Stoves and Ranges.**
Cleveland Co-operative Stove Co., Cleveland, Ohio
Oakland Foundry Co., Belleville, Ill.
Peninsular Stove Co., Detroit, Mich.
Quick Meal Stove Co., St. Louis, Mo.
Thatcher Co., Newark, N. J.
- Tacks, Staples, Spikes.**
American Steel & Wire Co., Chicago, Ill.
- Tile Cement—Elastic.**
Pecora Paint Co., Philadelphia, Pa.
- Triplate.**
Davis Co., Inc., C. S., Chicago, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Taylor Co., N. & G., Philadelphia, Pa.
- Tools—Tin Smith's.**
Bertsch & Co., Cambridge City, Ind.
Chicago Elbow Machine Co., Oak Park, Ill.
Double-Duty Mfg. Co., Aurora, Ill.
Dreis & Krump Mfg. Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Peck, Stow & Wilcox Co., Southington, Conn.
Unishear Co., The, New York, N. Y.
Viking Shear Co., Erie, Pa.
Whitney Mfg. Co., W. A., Rockford, Ill.
Whitney Metal Tool Co., Rockford, Ill.
- Torches.**
Berns Co., Otto, Newark, N. J.
Burgess Soldering Furnace Co., Columbus, Ohio
Clayton & Lambert Mfg. Co., Detroit, Mich.
Diener Mfg. Co., G. W., Chicago, Ill.
Double Blast Mfg. Co., North Chicago, Ill.
Quick Meal Stove Co., St. Louis, Mo.
- Trade Extension.**
Copper & Brass Research Association, New York, N. Y.
Sheet Steel Trade Extension Committee, Pittsburgh, Pa.
- Trimming—Stove.**
Fanner Mfg. Co., Cleveland, Ohio
- Ventilators.**
Arex Company, Chicago, Ill.
Aeolus Dickinson Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Friedley-Voshardt Co., Chicago, Ill.
Lupton's Sons Co., David, Philadelphia, Pa.
Kernchen Co., Chicago, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.
Royal Ventilator Co., Philadelphia, Pa.
Standard Ventilator Co., Lewisburg, Pa.
Sturtevant Co., Boston, Mass.
- Ventilators—Ceiling.**
Eaglesfield Ventilator Co., Indianapolis, Ind.
Hart & Cooley Co., New Britain, Conn.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Independent Register & Mfg. Co., Cleveland, Ohio
Tuttle & Bailey Mfg. Co., New York
Sturtevant Co., B. F., Boston, Mass.
- Windows—Steel.**
Lupton's Sons Co., David, Philadelphia, Pa.
- Wire—Electrical.**
American Steel & Wire Co., Chicago, Ill.
- Wire Hoops.**
American Steel & Wire Co., Chicago, Ill.
- Wire Rope.**
American Steel & Wire Co., Chicago, Ill.
- Wrenches.**
Coss Wrench Co., Worcester, Mass.
- Zinc.**
Merchant & Evans Co., Philadelphia, Pa.
New Jersey Zinc Co., The, New York, N. Y.

WANTS AND SALES

Any yearly subscriber to **AMERICAN ARTISAN** may insert advertisements of not more than fifty words in our Want and Sales Columns **WITHOUT CHARGE**.

Such advertisements, however, must be limited to help or situation wanted, tools or equipment for sale, to exchange or to buy, business for sale or location desired.

BUSINESS CHANCES

LIGHTNING RODS—Dealers who are selling Lightning Protection will make money by writing us for our latest Factory to Dealer Prices. We employ no salesmen and save you all overhead charges. Our Pure Copper Cable is endorsed by the Mutual Insurance Companies and hundreds of reliable dealers. Write today for samples and prices. **L. K. DIDDIE COMPANY**, Marshfield, Wisconsin.

For Sale—Furnace manufacturer desires to sell his entire plant, patents on furnace and equipment to make eleven furnaces per day. Eight years of service by hundreds of users has proven it to be a great heater and uses a third less fuel than any other type. Owing to health will sell at an extremely low figure or will take in a partner with \$25,000. Address C-8, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

For Sale—One Arcola Parlor Heater No. 60. Price \$75.00. Terms. Cash with order will send bill of lading with sight draft attached. This heater is absolutely new. It has never been moved off our floor. The porcelain casing is not chipped. It is complete with automatic regulator altitude gauge thermometer and expansion tank fittings. We have never been able to sell this heater and would like to get part of our money out of it. **I. Wilson & Co.**, Dunlap, Iowa. 23-3t

For Sale—Roofing and general sheet metal business, located in the best business section of Minneapolis, Minnesota. Will sell all or one-half interest. Business has a very desirable lease on the property it occupies. This is an excellent opportunity for a good man. Address C-10, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

Furnace Manufacturers Notice—A deal can be made for direct factory to consumer sales in city of Milwaukee and county. The finest, largest heating sales and display office in the state of Wisconsin is now maintained on fine business street. 300 to 400 furnaces per year with 50 to 60 boilers extra. Write **John Steffel**, 439 Eastwood Place, Milwaukee, Wisconsin. 22-3t

For Sale—Sheet metal shop and building 32x66 frame building in center of city. Business has been established 17 years. This is the town where Ford is building the large power dam. Building, stock and tools \$10,700. \$2,000 down, balance to suit purchaser. Address **Wm. P. Blair & Son**, 14-16 S. Huron St., Ypsilanti, Mich. 25-3t

For Sale—Fully equipped contracting sheet metal shop in fast growing suburb adjoining Chicago. Will invoice or will take a competent live wire who will do the work as partner. Address Q-2, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

For Sale—Sheet metal shop in southern Minnesota. Town of 4,500 population. Invoice around \$1,000. Address X-99, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

Will buy a car or two of furnaces from any dealer who wants to sacrifice price for cash. Inquire Q-6, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 24-3t

BUSINESS CHANCES

For Sale—Or partner wanted for established sheet metal work. Tile, slate and asbestos shingle roofing. Am putting in about 100 furnaces per year and I do no soliciting. This place is in a large territory about 20 miles from Chicago. It will require about \$2,000 for one half interest. Address X-98, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

HELP WANTED

Wanted—A first class sheet metal worker with experience with factory work, heavy sheet iron, blue prints, also pattern cutting, etc. Steady job year round for man who can qualify himself. Don't answer this ad unless fully experienced. Address Q-4, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 24-3t

Would like to get in touch with a first class warm air furnace and outdoor man to do furnace, guttering and roofing work. A married man preferred who would be interested in making his home in the thriving city of Chattanooga, Tennessee, a population over 100,000. Steady job for right party. **Stuts Brothers**, Chattanooga, Tennessee. 25-3t

Wanted—A first class sheet metal man, one who is familiar with estimating and furnace work. Must be able to clerk in hardware store in connection. Prefer married man. Address **Joe J. Voegeli**, Monticello, Wisconsin. 24-3t

SITUATION WANTED

Situation Wanted—By furnace man and sheet metal worker with 15 years' experience. Can do engineering from theory and from practical knowledge. Can cut most patterns, make up work and erect same in a workmanlike manner. Have had experience in factory work sheet metal department of furnace factory and on maintenance as well. Address C-9, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

Situation Wanted—An A-1 sheet metal worker, layout man, foreman and engineer with 25 years' experience, seeks position at once. Married man, strictly sober and steady; a hustler; can run shop to advantage; fully experienced in all branches of the trade. A Northern man but have been in Florida for two years. State full particulars and salary paid. Address "Hiram," Box 1703, Sarasota, Florida. 24-3t

Situation Wanted—Tinner, plumber and furnace man wishes steady position the year around. Will consider buying a working interest in a good tin and furnace business. Have had 25 years' experience. Can furnish 1st class references. Honest and a willing worker. Prefer hardware shop in connection. Address **W. H. Oneth**, 618 East 5th Street, Des Moines, Iowa. 22-3t

Situation Wanted—By first class tinner and furnace man. Can do inside and outside work. 25 years at the trade. Nothing but steady job the year around. Am married. Can do anything that comes in any tin shop. Address **W. J. Mack**, 37 East Main Street, Saint Charles, Illinois. 25-3t

Situation Wanted—Stove salesman selling a line of gas ranges to hardware and furniture stores wants a line of stove-pipe and elbows to sell to above trade on commission basis for 1927. All references. Address C-12, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

Situation Wanted—By young practical tinner, in plumbing shop. Good education with some knowledge of plumbing. Can furnish best of references. Want to learn plumbing. Prefer Illinois. Address Q-3, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

Situation Wanted—As furnace installer in Wisconsin or northern Iowa. Can estimate and lay out job. Good references. Steady employment desired. Address C-11, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

SITUATION WANTED

Situation Wanted—By a good all around plumber, tinner, steamfitter and furnace man. Tinner steady job with some hardware firm in a small town. Prefer combination shop or will rent shop where competition is not strong. Am first class combination man. At liberty after January 1st. Address X-97, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

Situation Wanted—As salesman and director of furnace installations. Have a thorough knowledge of the business, having learned in the school of experience. Not afraid to don overalls and help with practical end if necessary. Address Q-5, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 24-3t

Situation Wanted—Sheet metal and furnace man will be open for position January 1st. Can do plumbing and heating. Can give A-1 references. Can take charge of work. Married. Only steady position considered. Address X-94, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

Situation Wanted—By an experienced all around sheet metal worker with 25 years' experience. Can take charge and run shop. Can come on short notice. Address **P. S. McGuffin**, 36 South Jefferson Street, Battle Creek, Michigan. 22-3t

TINNERS' TOOLS

Wanted—To buy the following second hand tools—8 ft. cornice brake, 30 inch squaring shears, pipe folder, crimper with full set of benders, circle shears, swedging machine, 36 inch groover, large burring machine, large turning machine, forming rolls, hollow mandrel stake. The above to be in good condition, will pay cash. Address **L. E. Pothergill**, 504 Grant Street, Sycamore, Illinois. 25-3t

For Sale—Full set good tinner's tools including one 8-foot steel brake, almost new 31-inch squaring shear. Address **Harry Lyman**, Clarinda, Iowa. 22-3t

Wanted—A second-hand cornice brake, 8 or 10 ft. I prefer a Chicago brake, one that is very reasonable in price, as I am just getting started in sheet metal work. Address X-96, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Ill. 21-3t

Wanted—A used slip roll forming machine. Capacity 16 gauge and lighter, to take sheet 36 inches wide, 3-inch rolls and hand powered. Address X-93, care of **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago. 21-3t

For Sale—Complete set of tinner's tools and stock. Good business. Address Q-7, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 24-3t

SPECIAL NOTICES

The Rate for Special Notices
— displayed want ads —
\$3.00 per inch per insertion.

PATENTS

HUBERT E. PECK
Patent Attorney
Barriester Bldg., WASHINGTON, D. C.

SITUATION WANTED

Furnace salesman with a good, clean record is open for a position with an established firm. My past record shows that I can produce. Address L-99, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 24-3t

SPECIAL NOTICES**A FEW MEN**

with practical furnace selling experience needed to cover 3 or 4 desirable sales territories, with complete heating line.

Only high grade men will be considered.

Territories must be assigned by early December. Write promptly and in confidence.

L. J. Mueller Furnace Co.,
Milwaukee, Wisconsin

19-1f

INCREASE YOUR INCOME BY ADDING AUTO RADIATOR REPAIRING

Others have. So can you. Very little additional equipment is necessary. Write for Catalog J.—F. L. Curfman Mfg. Co., Maryville, Missouri.

23-1f

WANTED

Several good, live salesmen to sell complete unit "Furnace and Fan." Write us in full detail telling why you feel you can sell our line. All replies will be confidential. Our sales force knows of this ad. Address L-98, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

24-3t

FURNACE SALESMEN

Expanding sales make necessary an addition of five experienced salesmen to our force. These positions offer an opportunity to become affiliated with an old, established company, whose position of leadership in the heating field is unquestioned. Your record must stand a careful investigation. Prefer men between 30 and 45 years of age. Address M. E. Ledlie, Ideal Furnace Co., Detroit, Michigan.

22-4t

Free 60-page Reference Book

POLK'S
REFERENCE BOOK FOR
DIRECT MAIL
ADVERTISERS

Mailing List Catalog No. 55

Get Business by Mail

60 pages of vital business facts and figures. Who, where and how many your prospects are.

8,000 lines of business covered. Compiled by the Largest Directory Publishers in the world, thru information obtained by actual door-to-door canvass.

Write for your FREE copy.

R. L. POLK & CO., Detroit, Mich.
487 POLK DIRECTORY BLDG.
Branches in principal cities of U. S.

SPECIAL NOTICES**FURNACE SALESMEN**

Experienced retail furnace salesmen and furnace installers; splendid proposition for resourceful, energetic men of good character and habits; excellent opportunity to get established in business with a specialty that insures attractive profits; young man, financially responsible preferred, although good moral risks will be interviewed; only those with successful records need apply. Address L-88, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

19-3t

WANTED FURNACE SALESMAN FOR IOWA

To sell a well-known make of cast furnaces. Only applications from men who have a clean, successful record and know the furnace business will be entertained. Applicants will please give complete record of experience, for whom traveled, age, territory covered, salary and whether familiar with the Standard Code. Prefer man with a car. Only producers need apply as this is an opportunity for a real salesman to make real money. Address L-97, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

24-3t

ALUMINUM SOLDER

Order the **FAULTLESS SOLDER** and **FLUX** to solder all kinds of Aluminum from

Zenor Aluminum Solder Co.

Manufacturers and Distributors of High Grade
Aluminum Solder and Supplies
1436 Latham Place Rockford, Illinois

SPECIAL NOTICES**FURNACE SALESMAN
WANTED**

for southern half of Illinois. This furnace has a well established business in this territory. We require a practical furnace man. In replying state age and previous furnace experience. Address L-95, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

24-2t

SITUATION WANTED

Young man who has held position as sales manager of a stove and furnace company and assistant sales manager of another large furnace company, will be available January 1st. Can furnish proof of his sales ability and is willing to prove this to you by actual contact with the trade. Age 30. Address W-1, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

24-3t

**THE STANDARD
FOR MANY YEARS**

It Pulls Business Your Way!

KERNCHEN SIPHONAGE
VENTILATOR



"IT PULLS"

SUPPLY your next job with "K.S.V." and you never will have a complaint. Complete stock on hand for prompt shipment.

Write to-day for complete data and prices
Made only by

KERNCHEN COMPANY
Ventilating Engineers
Room 1576, 113 W. WASH. ST., CHICAGO



"Can you lay out work like that?" asked one employer. "That's the kind of men I hire and give steady work. My men help me and I help them in this business."

HAVE YOU ABILITY WORTH \$3,000 A YEAR?

If you want to get into the Bigger Pay Class of Jobs we can qualify you for such Positions. All big concerns now say, "the Position pays (so much), qualify for it and you will get the money." Thus:

FOREMANSHIP pays	\$2,500 to \$3,000 a year
ESTIMATORS	\$2,800 to \$3,800 a year
HEATING ENGINEERS	\$3,000 to \$25,000 a year
SUPERINTENDENTS	\$4,000 to \$15,000 a year
SALES ENGINEERS	\$3,500 to \$12,000 a year
GENERAL MANAGERS	\$4,500 to \$30,000 a year
PRESIDENTS, range	\$6,000 to \$50,000 a year

JOURNEYMEN and SMALL SHOP OWNERS are lucky to average \$1,800 a year income, because they don't train themselves. Let us Coach YOU to be a WINNER. OUR COACHING QUALIFIES YOU FOR AN ENGINEERING DEGREE. We teach you in your Own Home, Personal, Clear, Direct. Write today, while you think about it. Select your Course.

- ☐ SHEET METAL DESIGN AND PATTERN DRAFTING
- ☐ SPECIAL WARM AIR FURNACE HEATING
- ☐ SHEET METAL CONTRACTING AND ESTIMATING
- ☐ FAN HEATING VENTILATING ENGINEERING

THE ST. LOUIS TECHNICAL INSTITUTE O. W. KOTHE, Pres. 4548 Clayton Ave., St. Louis, Mo.

This is your last opportunity
to order

BOOKS

in time for

NEW YEAR

The Universal Sheet Metal Pattern Cutter Vols. 1 and 2

By Neubecker

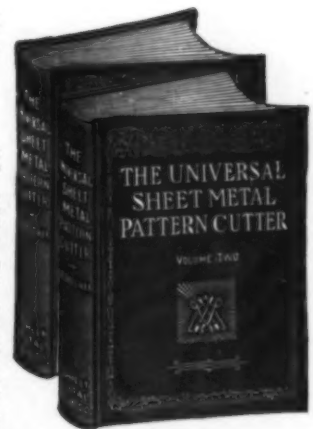
TWO books that can't be beat. The most practical and useful treatises on the subject.

Work of all the branches of the trade and the broadest scope of details are found—inside and outside work—small jobs and the most complicated are shown, explained and profusely illustrated.

The first volume deals with all types and kinds of inside small and large sheet metal work.

The second volume deals with the more advanced branches of sheet metal work, in fact is largely devoted to the architectural end of the business. It consists of 400 double column pages and is illustrated with 711 engravings showing all methods under treatment, as well as perspective views of the subjects of the patterns, and other demonstrations in their finished state. It includes drawing, full sized detailing and lettering, development and construction of all forms of sheet metal construction work.

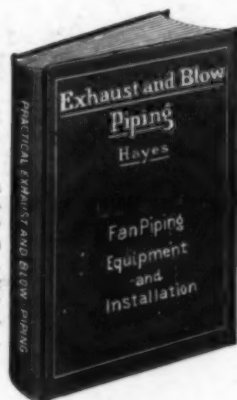
The volumes are bound in heavy cloth and each measures 9 x 12 in. Each contains over 350 pages and 650 original drawings. Price \$7.50 each.



Exhaust and Blow Piping

By Hayes

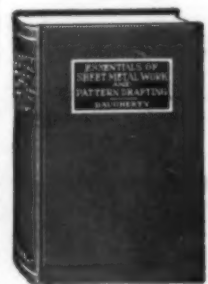
EXHAUST and Blow Piping has had an unusually big demand. A fresh supply is now off the press and is in our hands for immediate delivery. It has an invaluable treatise on the planning, cost, estimation and installation of fan piping in all its branches, giving all necessary guidance in fan work blower and separator construction. 159 pages, 5 x 8, 51 figures. Cloth, \$2.00.



Essentials of Sheet Metal Work and Pattern Drafting

By Professor J. S. Daugherty

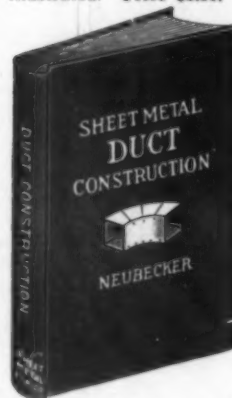
INVALUABLE to the sheet metal worker, contractors and instructor, as well as an elementary and advance course for vocational and trade school students and apprentices. Some of the subjects covered are pattern cutting, soldering, edging, wiring, radial line development, pipes, elbows, miters, pitched covers and flaring articles, pipe intersections and tee joints. 181 pages, substantially bound in blue cloth; profusely illustrated. Price \$1.50.



Sheet Metal Duct Construction

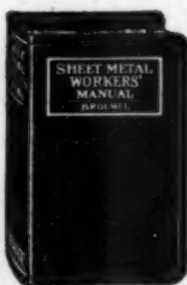
By Neubecker

A TREATISE on the construction and erection of heating and ventilating ducts, including the cutting and forming of the metal, the laying out of the elbows, etc. A practical expert wrote this book and you'll find that it covers the subject thoroughly. By William Neubecker. Bound in cloth, 194 pages, 217 illustrations. Size 5 1/2 x 8 1/4 in. Price \$2.00.



Sheet Metal Workers' Manual

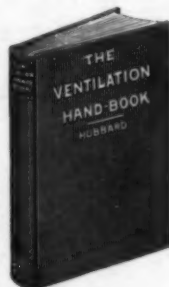
A NEW book produced by the combined efforts of L. Broemel, a practical man, and the late Professor J. S. Daugherty, instructor in Sheet Metal Work at the Carnegie Institute of Technology, Pittsburgh. Pattern drafting is its biggest feature; not only tells how to make the pattern, but how to develop it with modern machines and tools; gives valuable assistance on soldering, brazing, welding, crimping, beading, straight, circular and irregular cutting, in fact covers every angle of the trade. Bound in leatherette; 500 pages; more than 400 pen drawings and illustrations. Price \$2.00.



The Ventilation Hand-book

By Charles L. Hubbard

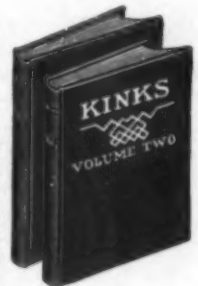
A PRACTICAL book designed to cover the principles and practice of ventilation as applied to furnace heating; ducts, flues and dampers for gravity heating; fans and fan work for ventilation and hot blast heating by means of a comprehensive series of questions, answers and very plain descriptions easy to understand. Price \$2.00.



Kinks and Labor Saving Methods for Sheet Metal Workers Vols. 1 and 2

VOLUME I. There are hundreds of ideas and expedients, all contributed by sheet metal workers throughout the country, illustrated by cuts and original drawings. Cloth bound. Size 4 1/2 x 7 in. Price \$1.00.

Volume II. written in same popular style as Volume I. Places at your disposal a comprehensive collection of ingenious ways of executing many practical tasks in much more simple way than if done in the regulation manner. Also contains special articles on Automobile Repairing; gives a very practical series of illustrated directions on erecting metal ceilings with ten guide rules which will save time, trouble and expensive mistakes. Price \$1.00.



Use
This
Order
Blank

Books Wanted

AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago, Ill.

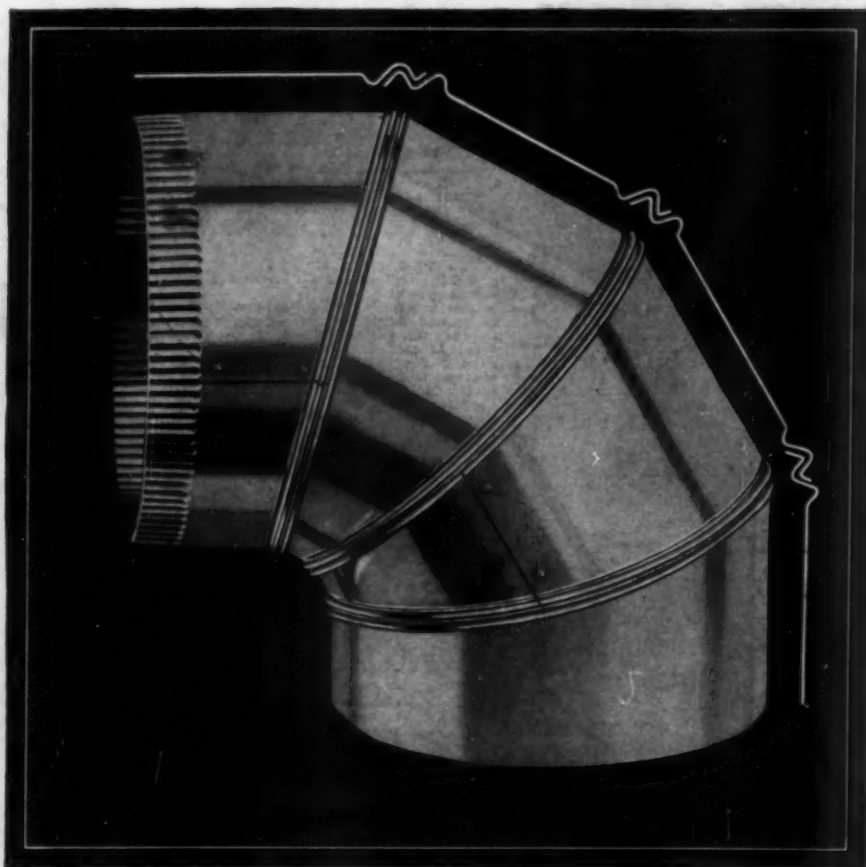
For the enclosed \$..... send the books ordered and enter following subscription (or renewal.)

Name.....

Address.....

NOTE

Deduct 10% from TOTAL amount of order when subscription is included with order for books.



Study THIS Swedge!

THE construction of Milcor Adjustable Furnace Pipe Elbows insures easy adjustability *always*, without any looseness of joints or any danger of pulling apart. The New Milcor special swedge does it. You'll appreciate the difference. The swedge is extra deep — designed so it can't bind and still can't come apart. You'll immediately recognize these Milcor Elbows as the finest you have ever used — truly adjustable! Likewise Milcor Furnace Pipe and Fittings, Stove Pipe and Elbows, Conductor Pipe Elbows and the complete Milcor Line insure greater satisfaction than you have ever had reason to expect. Immediate deliveries, too, right from stock from Milwaukee, Chicago, Kansas City or La Crosse, on the same day your order arrives. Leading jobbers also carry the Milcor Line.

*New List Prices and Discounts Now Ready.
Copies on Request.*

MILWAUKEE CORRUGATING COMPANY, Milwaukee, Wis.
Chicago, Ill. Kansas City, Mo. La Crosse, Wis.

MILCOR ELBOWS